

How do students and staff at the University of Cape Town understand equitable access to the curriculum for students with VIs?



Ikechukwu Nwanze

Thesis submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

Disability Studies

Department of Health and Rehabilitation Sciences

University of Cape Town

Supervisor: Professor Judith McKenzie

Co-Supervisor: Dr. Kevin Murfitt

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

## Declaration

I, Mr. **Ikechukwu Joseph Nwanze**, do hereby declare that this thesis titled, 'How do students and staff at the University of Cape Town understand equitable access to the curriculum for students with VIs?' is my personal work and has not been submitted to any other university for any degree or examination. I also declare that where external sources were used, they have been fully acknowledged in the reference list section. I used the UCT Author Date based on Harvard Style referencing style.

Signed

Name:

Date:

## Acknowledgments

To the Lord of All the Worlds who created all, sustains all whether they are aware of it or not, I say thank you. Your firm guidance through the PhD journey has been clear. May I fulfil as thou have directed.

To my supervisors, starting with Professor Judith McKenzie. The PhD journey and completion would not have been possible without her care, understanding, firmness and encouragement. She brought balance in a journey that is usually lonely through numerous reminders to maintain work life balance. She has also been a pillar of support in lightening the load from pressures of the workplace so that I could focus more on the PhD and as such I can certainly note that, if not for her way of relating, I may not have completed. Her manner of engagement remains forever etched in my consciousness. She also generously funded part of this PhD for which I remain grateful.

To my co-supervisor, Dr. Kevin Murfitt. His unique perspective cleared conceptual blockages and identified critical points to enhance clarity of ideas. His encouragements lit the fire in me to keep going as he impressed on me that the PhD is a journey that has an end, a happy end.

Then to my participants, both students with VI and staff members. They engaged with a unique data gathering process, sharing their enthusiasm and concerns candidly. Students with VI were particularly enthused with the research process and staff member insights provided direction that would advance the right to education.

My head of Division, Professor Theresa Lorenzo for her accommodation for time to dedicate to the PhD and my colleagues, Dr. Noreth Muller-Kluits, Sumaya Gabriels, Nafisa Mayat, Dr. Adele Ebrahim, Amour McCarthy, Nicolette Pasqualle and Shireen Damonse for your constant encouragement, taking on extra work to give me more time. I appreciate it.

To my family, especially my twin sister who always understands my spiritual leanings and is always a sounding board. My parents and other siblings for their care, concern and encouragements.

Then to the University of Cape Town for your funding of the first three years of the PhD which lessened my anxiety for source of funding. Thank you.

Lastly, to my PhD colleagues, Dr. Dominique Brand and Dr. Karina Fischer-Mogensen. Thanks for your understanding of the stages I was going through and offering advice.

## **Dedication**

I dedicate this to the Lord of all the Worlds that this journey has opened the sensing of a path forward in honor of His Name in serving humanity through my fellow human spirits, especially those who are differently abled.

## Definition of Terms

**Centralised:** To concentrate by placing power and authority in the center or in a single department at a university (Merriam-Webster, 2023).

**Digital Environment:** An encapsulation in an environment where a person uses digital devices to engage over a communication network such as the internet within a certain context (IGI Global, 2022).

**Digital Literacies:** The skills needed to acquire different forms of literacy, i.e., media or information literacy using digital devices within a certain context that embodies norms and practices (Belshaw, 2014; Littlejohn, Beetham & McGill, 2012).

**Decentralised:** This is the spreading of the responsibility of catering for students with disability beyond the disability services department to the whole university (Mole, 2013).

**Equitable Access:** Availability and accessibility of equal opportunities irrespective of differences in abilities of a person (McCowan, 2016; McCowan, 2004).

**Expanded Core Curriculum:** The knowledge and skills beyond the core curriculum needed by student with VI to fully participate in school like their non-disabled peers (Opie, 2018).

**Inclusive Education:** Support for the presence, participation and achievement of all children at school (Messiou, 2017).

**Individualised:** To adapt to the needs or special circumstances of an individual (Merriam-Webster, 2023).

**Information and Communication Technologies:** The combination of data, software, hardware devices and the communications that use them over a network between people (Pratt, 2019).

**Institutional:** A significant practice, relationship, way of functioning of an established organisation or corporation (Merriam-Webster, 2023).

**Universal Design for Learning:** Refers to a framework that enhances teaching and learning through multiple means adapted to different ways of learning (Centre for Applied Special Technology [CAST], 2022)

**Visual Impairment:** The reduction or impairment of vision of a person that cannot be corrected to a normal level either by eyeglasses, surgery or medication (Debrowski, 2021).



## Abbreviations

AT	Assistive Technology
CAST	Centre for Applied Special Technology
CHED	Centre for Higher Education Development
CILT	Centre for Innovation in Learning and Teaching
CST	Crib Sheet Table
DOE	Department of Education
ECC	Expanded Core Curriculum
EV	Eigenvalue
EWP6	Education White Paper 6
FAT	Factor Array Table
FGD	Focus Group Discussion
ICT	Information and Communication Technology
ICTS	Information and Communication Technology Services
IE	Inclusive Education
LMS	Learning Management System
MOOC	Massive Open Online Courses
SAT	Study Analysis Table
SR	Survey Response
THE	Times Higher Education
UCT	University of Cape Town
UDHR	Universal Declaration of Human Rights
UDL	Universal Design for Learning
UN	United Nations
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
VI	Visual Impairment
W3C	World Wide Web Consortium
WCAG	Web Content Accessibility Guidelines
WHO	World Health Organisation

## Abstract

Students with Visual Impairment (VI) still experience barriers to education despite the right to education stipulated in the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD). Challenges such as delays in the conversion of curriculum content to accessible formats, inaccessible online course sites and teaching and learning that is mostly visual. With the University of Cape Town (UCT) going fully online due to COVID-19 pandemic, it became necessary to explore how equitable access to the curriculum is understood. The research topic is: How do staff and students at UCT understand equitable access to the curriculum for students with VIs? Four conceptual framework components were used. The hidden and enacted curriculum was used to explore hidden curriculum aspects and their effect on the enacted curriculum. Universal Design for Learning (UDL) framework was used to explore enablers such as assistive technology (AT) and challenges such as inaccessible content. Eight elements of digital literacies were used to explore access to opportunities to acquire digital literacies and the UNCRPD to ensure alignment with the right to education. A Q methodology study was conducted which is a hybrid of both quantitative and qualitative methods. It statistically groups viewpoints that are significantly similar to or distinct from each other, quantitatively into factors, then qualitatively interprets these factors thematically to reveal participant views about the research topic. Data was collected from students with VI, lecturers, staff from Disability Services, ICT Services, Library Services and the Centre for Higher Education Development using Q sorting where participants ranked sixty statements into disagree, neutral and agree. Focus group discussions were used to support the interpretation of the factors. Findings revealed that: accessible curriculum is also a technical issue which is not prioritised at UCT, and lecturers struggle with competing demands such lack of time, need for promotion and research. Accessibility design from the start both for curriculum development and support services is not valued. The right to education for students with VI is partial, varying their experience of the curriculum. Testing of a course site for accessibility and lack of AT negatively affects right to education. This study argues that students with VI do not yet enjoy full participation in the curriculum due to lack of understanding of the complexity involved. UDL can help academics move from a deficit view to an asset view of students with VI. UCT should change its operational model to accessibility from the start. Then UCT will move closer to equitable access to the curriculum for students with VI.

## Table of Contents

Declaration.....	ii
Acknowledgments.....	iii
Dedication .....	v
Definition of Terms .....	vi
Abbreviations .....	viii
Abstract.....	ix
Table of Contents.....	x
List of Figures .....	xv
List of Tables .....	xvi
Chapter 1 – Introduction.....	17
1.1 Background.....	17
1.2 Problem statement .....	19
1.3 Rationale and significance of study.....	20
1.4 Study site .....	20
1.5 Aim of the study .....	21
1.6 Objectives of the study .....	21
1.7 Research question.....	22
1.7.1 Sub questions.....	22
1.8 Outline of thesis chapters .....	22
1.8.1 Introduction chapter.....	22
1.8.2 Literature review chapter.....	23
1.8.3 Theoretical framework chapter.....	23
1.8.4 Methodology chapter.....	23
1.8.5 Findings chapter .....	23
1.8.6 Discussion chapter.....	24
1.8.7 Conclusions and recommendations chapter .....	25
Chapter 2 – Literature Review .....	27
2.1 Introduction .....	27
2.2 What is VI?.....	27
2.3 Implications of VI in education.....	28
2.3.1 Expanded core curriculum.....	28
2.3.2 Inclusive education.....	30
2.4 The implications of being visually impaired in higher education on students with VI.	33
2.5 Barriers that students with VI experience in higher education.....	34
2.6 Some strategies currently used to address the barriers .....	39

2.7 What has been done at UCT .....	44
2.8 Equitable access to the curriculum .....	47
Chapter 3 – Theoretical Frameworks .....	50
3.1 Introduction .....	50
3.2 Formulation of the theoretical framework.....	50
3.3 Literacy.....	51
3.4 Digital literacies.....	53
3.5 The nature of the curriculum .....	56
3.5.1 The official curriculum.....	57
3.5.2 The technical curriculum.....	57
3.5.3 The enacted curriculum .....	58
3.5.4 The hidden curriculum .....	59
3.5.5 The online curriculum .....	60
3.6 Universal Design for Learning .....	61
3.7 Right to education.....	63
3.8 Conclusion.....	64
Chapter 4 – Methodology .....	65
4.1 Introduction .....	65
4.2 Research design .....	65
4.3 Methodology.....	67
4.4 Brief history of Q methodology .....	68
4.5 Steps to carry out a successful Q methodological study .....	70
4.5.1 Generating a concourse of statements .....	70
4.5.2 Choosing the Q set from the concourse.....	71
4.5.3 Selection of the participant (P Set).....	72
4.5.4 The Q sorting process.....	72
4.5.5 Analysing the data .....	74
4.5.6 Factor Interpretation .....	75
4.5.7 Surveys and focus group discussions .....	76
4.6 How the study was carried out using Q methodology.....	77
4.6.1 Generating the concourse statements .....	77
4.6.2 Choosing the Q-set out of the concourse.....	80
4.6.3 Selection of the participants (P set) .....	81
4.6.4 Participants’ inclusion criteria.....	82
4.6.5 Exclusion criteria.....	83
4.6.6 Recruitment of participants .....	83
4.6.7 The Q sorting process - data collection .....	84

4.6.8 Analysing the data .....	88
4.6.9 Factor Interpretation .....	90
4.6.10 Focus group discussion.....	95
4.7 Trustworthiness and scientific rigour .....	96
4.7.1 Credibility.....	96
4.7.2 Confirmability .....	97
4.7.3 Dependability .....	98
4.7.4 Transferability .....	98
4.8 Ethical considerations.....	98
4.8.1 Autonomy and informed consent .....	99
4.9 Confidentiality, non-maleficence, beneficence and justice .....	99
4.10 Conclusion.....	100
Chapter 5 – Findings.....	101
5.1 Introduction .....	101
5.2 Q Study: All-Participant (AP) .....	105
5.2.1 Factor 1: Accessible curriculum is also a technical issue.....	106
5.2.2 Factor 2: Institutional leadership lacks recognition of the value of accessibility design from the start .....	115
5.3 Q Study: staff only (SO).....	124
5.3.1 Factor 1: Partial rights – access but not full participation .....	128
5.3.2 Factor 2: Enablers and barriers to students with VI participation varies.....	132
5.4 Q Study: students with VI only (SVIO) .....	136
5.4.1 Factor 1: If not provided for or tested, it is discrimination .....	136
5.5 Conclusion.....	141
Chapter 6 - Discussion.....	142
6.1 Introduction .....	142
6.2 A need for a better understanding of the right to education for students with VI.....	143
6.3 Understanding the hidden curriculum effect on the enacted curriculum for students with VI.....	145
6.4 The hidden curriculum expressed in the enacted curriculum through UDL .....	151
6.5 Accessible curriculum is also technical issue.....	155
6.5.1 There is no time to include UDL in the curriculum .....	156
6.5.2 UDL is not a priority due to competing demands .....	157
6.6 Institutional support for UDL at UCT needs monitoring mechanisms .....	158
6.7 Institutional leadership lacks recognition of the value of accessibility design from the start .....	160
6.7.1 Digital literacies, ICTs in relation to the retrofitting model.....	162

6.8 What is the staff and student position on equitable access to the curriculum at UCT for students with VI? .....	167
Chapter 7 - Conclusions and Recommendations .....	169
7.1 Introduction .....	169
7.2 Conclusions .....	169
7.3 Limitations of the study.....	170
7.4 Implications for practice at UCT .....	171
7.5 Recommendations .....	173
7.5.1 Study recommendations to UCT and other Universities.....	173
7.5.2 Recommendations for future research.....	179
7.6 Conclusions .....	180
8 References .....	181
9 Appendices.....	198
9.1 Appendix 1 – Sample Q set Table.....	198
9.2 Appendix 2 - Factor array Table 1 (FAT1) for AP study factor 1 and factor 2 (APF1 and APF2).....	202
9.3 Appendix 3 - Study analysis Table (SAT1) Table for Q sorts that significantly loaded unto all participant factor 1 (APF1).....	206
9.4 Appendix 4 - Crib sheet Table 1 (CST1) for all participant study factor 1 (APF1)....	212
9.5 Appendix 5 - Study analysis Table 2 (SAT2) Table for Q sorts that significantly loaded unto APF2.....	216
9.6 Appendix 6 - Crib sheet Table 2 (CST2) for all participant study factor 2 (APF2)....	220
9.7 Appendix 7 - Factor array Table 2 (FAT2) for SO study factor 1 and 2 (SOF1 and SOF2) .....	224
9.8 Appendix 8 - Study analysis Table 3 (SAT3) Table for Q sorts that significantly loaded unto staff only factor 1 (SOF1) .....	227
9.9 Appendix 9 - Crib sheet Table 3 (CST3) for staff only Factor 1 (SOF1) .....	231
9.10 Appendix 10 - Study analysis Table 4 (SAT4) Table for Q sorts that significantly loaded unto SO Factor 2 (SOF2).....	235
9.11 Appendix 11 - Crib sheet Table 4 (CST4) for staff only Factor 2 (SOF2) .....	238
9.12 Appendix 12 - Factor Array Table 3 (FAT3) for student with VI (SVIO) study factor 1 (SVIOF1).....	242
9.13 Appendix 13 - Study analysis Table 5 (SAT5) Table for Q sorts that significantly loaded unto SVIO Factor 1 (SVIOF1).....	245
9.14 Appendix 14 – Information sheet.....	247
9.15 Appendix 15 – Informed Consent Form.....	249
9.16 Appendix 16 – Q Sorting Instructions for Staff Members .....	250
9.17 Appendix 17 – Q Sorting instructions for Students with VI .....	252
9.18 Appendix 18: Question for Staff Focus Group Discussion.....	255

9.19 Appendix 19 - Questions for Students with VI Focus Group Discussion.....	257
9.20 Appendix 20 – Participant demographics.....	258
9.21 Appendix 21 Ethical Clearance from the University of Cape Town.....	259
9.22 Appendix 22 Ethical Clearance from the University of Cape Town for staff.....	260
9.23 Appendix 23 Ethical Clearance from the University of Cape Town for students with VI.....	261
9.24 Appendix 24 Physical distribution grid with statements.....	262
9.25 Appendix 25 Consensus statements for all participant factor 1 (APF1) and factor 2 (APF2).....	263
9.26 Appendix 26 Consensus statements for staff only factor 1 (SOF1) and factor 2 (SOF2).....	266
9.27 Appendix 27 Distinguishing statements for all participant factor 1 (APF1) and factor 2 (APF2).....	269
9.28 Appendix 28 Distinguishing statements for staff only factor 1 (SOF1) and factor 2 (SOF2).....	275

## List of Figures

FIGURE 1: SAMPLE Q SET.....	68
FIGURE 2: THEORETICAL FRAMEWORK WITH ITS FOUR COMPONENTS .....	142
FIGURE 3: PHYSICAL DISTRIBUTION GRID WITH STATEMENTS .....	262



## List of Tables

TABLE 1: CONCOURSE CATEGORIES AND DIMENSIONS .....	78
TABLE 2: FACTOR ARRAY TABLE (FAT) FOR AP STUDY FACTOR 1 AND FACTOR 2 (APF1 AND APF2) .....	90
TABLE 3: STUDY ANALYSIS TABLE (SAT) FOR AP FACTOR 1 AND FACTOR 2 (APF1 AND APF2).....	91
TABLE 4: CRIB SHEET TABLE (CST) FOR ALL PARTICIPANT STUDY FACTOR 1 (APF1) .....	92
TABLE 5: FACTOR OUTLINE FOR Q STUDY AP VARIANCE ACCOUNTED FOR BY FACTOR 1 AND FACTOR 2 WITH FACTOR 1 AND 2 LOADINGS .....	102
TABLE 6: FACTOR ARRAY TABLE 1 (FAT1) FOR AP STUDY FACTOR 1 AND FACTOR 2 (APF1 AND APF2) .....	102
TABLE 7: Q STUDY AP VARIANCE ACCOUNTED FOR BY FACTOR 1 AND FACTOR 2 WITH FACTOR 1 AND 2 LOADINGS .....	106
TABLE 8: STUDY ANALYSIS TABLE (SAT1) TABLE FOR Q SORTS THAT SIGNIFICANTLY LOADED UNTO ALL PARTICIPANT FACTOR 1 (APF1) .....	106
TABLE 9: CRIB SHEET TABLE 1 (CST1) FOR ALL PARTICIPANT STUDY FACTOR 1 (APF1) .....	107
TABLE 10: Q STUDY ALL PARTICIPANTS VARIANCE ACCOUNTED FOR BY FACTOR 2 AND FACTOR 2 LOADINGS .....	116
TABLE 11: STUDY ANALYSIS TABLE 2 (SAT2) TABLE FOR Q SORTS THAT SIGNIFICANTLY LOADED UNTO APF2.....	116
TABLE 12: CRIB SHEET TABLE 2 (CST2) FOR ALL PARTICIPANT STUDY FACTOR 2 (APF2) .....	117
TABLE 13: Q STUDY STAFF ONLY VARIANCE ACCOUNTED FOR BY FACTOR 1 AND FACTOR 1 LOADINGS .....	124
TABLE 14: FACTOR ARRAY TABLE 2 (FAT2) FOR SO STUDY FACTOR 1 AND FACTOR 2 (SOF1 AND SOF2) .....	125
TABLE 15: Q STUDY STAFF ONLY VARIANCE ACCOUNTED FOR BY FACTOR 1 AND FACTOR 1 LOADINGS .....	128
TABLE 16: STUDY ANALYSIS TABLE 3 (SAT3) TABLE FOR Q SORTS THAT SIGNIFICANTLY LOADED UNTO STAFF ONLY FACTOR 1 (SOF1) .....	128
TABLE 17: CRIB SHEET TABLE 3 (CST3) FOR STAFF ONLY FACTOR 1 (SOF1) .....	129
TABLE 18: Q STUDY STAFF ONLY VARIANCE ACCOUNTED FOR BY FACTOR 2 AND FACTOR 2 LOADINGS .....	132
TABLE 19: STUDY ANALYSIS TABLE 4 (SAT4) TABLE FOR Q SORTS THAT SIGNIFICANTLY LOADED UNTO SO FACTOR 2 (SOF2) .....	132
TABLE 20: CRIB SHEET TABLE 4 (CST4) FOR STAFF ONLY FACTOR 2 (SOF2) .....	133
TABLE 21: Q STUDY STUDENTS WITH VI ONLY VARIANCE ACCOUNTED FOR BY FACTOR 1 AND FACTOR 1 LOADINGS .....	136
TABLE 22: FACTOR ARRAY TABLE 3 (FAT3) FOR STUDENTS WITH VI (SVIO) STUDY FACTOR 1 (SVIOF1) .....	137
TABLE 23: STUDY ANALYSIS TABLE 5 (SAT5) TABLE FOR Q SORTS THAT SIGNIFICANTLY LOADED UNTO SVIO FACTOR 1 (SVIOF1). 140	

## **Chapter 1 – Introduction**

This chapter covers the background to the research topic. It will introduce the complexity surrounding the research topic. It will also present the reasons the research was undertaken, the aim and objectives of the research and the research question and sub questions. It will then conclude with a layout of how the thesis has been structured.

### **1.1 Background**

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) was ratified at the United Nations and is an important convention which seeks to promote the inclusion of persons with disability in all aspects of society (UN, 2006; Callus & Camilleri-Zahra, 2017). The convention promotes that persons with disability are not excluded from society based on their impairment but accommodated based on human rights and equal opportunities (UN, 2006).

As regards students with Visual Impairment (Students with VI) specifically, who are the focus of this study, data from Statistics South Africa in 2016 showed that 10% of the overall population in South Africa (SA) have one form of VI or another (Tom, Mpekoa & Swarts, 2018). In higher education, students with VI make up about 1% of the population (Tom, Mpekoa & Swarts, 2018).

Lack of physical access to buildings in higher education for students with disabilities including students with VI remains an issue; however, access now goes beyond that to include the curriculum (Tom, Mpekoa & Swarts, 2018; Siwela, 2017).

Curriculum content, teaching, learning and assessment methods are not always adapted to the needs of students with VI (Simui et al., 2018), needs such as having audio equivalent of curriculum content. Lecturers often lack the skills to adapt the curriculum for students with VI which can be due to lack of institutional support, anxiety to teach students with VI or lack of time to dedicate to an accessible curriculum (Hewett, 2017).

A 10-year literature review study into enablers and disablers to academic success of students with VI found that, although access has improved at higher education institutions in SA, systemic barriers still exist that prevent the full participation of students with VI (Simui et al., 2018). Barriers such as lack of budget for assistive technology, lack of training for academics on how to teach students with VI and an inflexible curriculum that does not fully meet students with VI's learning means. Learning means refers to the preferred ways different students learn best (Dell, Dell & Blackwell, 2015).

Internationally, access to higher education for students with VI has improved but there are still barriers which can also apply to SA institutions (Simui et al., 2018). Such barriers include more focus on individual support rather than on institutional support and accessibility of course sites (Hewett et al., 2017). Hewett et al. (2017) also found that the disability services at institutions in the United Kingdom did not have autonomy and as such their influence to effect change was limited. The most significant finding from Hewett et al.'s (2017) study was that these barriers came from lack of anticipatory adjustments that the institutions needed to have. Anticipatory adjustments mean the institution anticipates the needs of students with VI before their time of study begins and therefore targets proactively addressing barriers so students with VI succeed at university. Madhesh (2021) study from Saudi Arabia and Nasiforo's (2015) study from Rwanda also found that lecturers lacked the skills to understand and use assistive technologies and ICTs with students with disabilities.

The barriers discussed above hinder the achievement of full participation for students with VI. These barriers are also present at the University of Cape Town (UCT).

UCT has a disability policy that indicates commitment to reviewing the curriculum including content, teaching and learning methods and assessment methods (UCT, 2011). However, the implementation of this has been centralised to UCT disability services centre where personnel may not be experts in the disciplinary expertise of UCT's various academic departments. UCT has also adopted online provisions in teaching and learning which have implications for students with VI. Implications such as inaccessible course sites and inaccessible communication tools such as Zoom and Microsoft Teams mean further exclusions.

With the arrival of the COVID-19 pandemic, all instructions were forced to be exclusively online for many universities creating some barriers for students with VI (Madhesh, 2021). Students with VI often mentioned not being able to share presentations, turn on their microphones or understand what others were sharing, which Madhesh (2021) attributes to lecturers not having the skills on how to use ICTs with students with disabilities which includes students with VI. Mantzikos and Lappa (2020) also reported increased exclusion of deaf students similar to students with VI as a result of the sudden and rapid adaptation to full online teaching and learning to mitigate the effect of the COVID-19 pandemic.

The increasing use of information and communication technologies (ICTs) at UCT and other universities is now a functional requirement to successfully study at university and as such necessitates an examination of the opportunities that can be made available by higher education to make ICTs accessible for students with VI (Tom, Mpekoa & Swarts, 2018).

With various barriers mentioned in engaging with the university curriculum for students with VI, this study asks how staff and students at UCT understand equitable access to the curriculum. McCowan (2016) notes that, apart from access to university, which is getting a place in the institution to study, other barriers persist such as curricula that cater mostly to non-disabled students and lack of consideration for a student's context such as their socio-economic status, race or disability. Therefore, equitable access to the curriculum as McCowan (2016) notes is about equality of opportunities to fulfil the requirements of the right to education.

## **1.2 Problem statement**

With online provision of the curriculum in today's universities students with VI experience multiple barriers at various levels (Fish-Hodgson & Khumalo, 2015). These barriers range from inaccessible content, and sub-par teaching and learning methods, including assessment methods and lack of understanding as to appropriate support for students with VI. To make progress in achieving the right to education as stated in the UNCRPD for students with VI, it is necessary to ascertain to what extent these barriers negatively impact on the independence

of students with VI in higher education. Staff and student understanding of equitable access to the curriculum for students with VI may also highlight further barriers that were previously unknown.

Recommendations can then be made as to effective strategies that can move students with VI beyond access to higher education to full participation in the curriculum in ways that allow them to translate university study into meaningful opportunities after they graduate (McCowan, 2016).

### **1.3 Rationale and significance of study**

Studies have been conducted to find barriers to participation for students with VI in higher education (Hewett et al., 2017; Simui et al., 2018; Tom, Mpekoa & Swart, 2018). While these studies and others offer insights into existing barriers such as an inflexible curriculum, few have looked at a combined interplay between the effects of curriculum with opportunities to access digital literacies, understanding of the right to education from staff and student perspectives and its manifestation and finally how teaching and learning methods may limit achievement of the right to education for students with VI. Without an understanding of this complex interplay, there is the danger that understanding of equitable access to the curriculum for students with VI will continue to be seen as a unidimensional (single) issue rather than a complex one deserving integration at many levels. In the next section, I will introduce the site where this study was conducted.

### **1.4 Study site**

This study was carried out at UCT, which was founded in 1829 and is South Africa's oldest public university (UCT, 2021). Situated in Cape Town of the Western Cape Province, South Africa, it is Africa's top university according to Times Higher Education (Times Higher Education [THE], 2021). As of 2021, UCT had a total of 30,392 students enrolled at the university and in 2019, the UCT Disability Services Department supported about 150 students with a range of physical, sensory, neurological, cognitive, and intellectual disabilities (UCT, 2019; UCT, 2022). For the year 2020, ten students with VI at UCT alone, 40 volunteers were

employed to help with print text conversion into accessible formats (Oldham, personal communication 2020, June 19).

UCT is committed, as previously stated in the UCT Disability Policy, to address barriers to full participation of students with disabilities (UCT, 2011). While doing this, the university will take care not to lower academic standards (UCT, 2011). Therefore, strategies on how to go about this would be required.

The policy also states that UCT supports and will make resources available for awareness raising among its student and staff body of the valuable contributions of people with disabilities and to foster respect (UCT, 2011). The policy further speaks to accessible education by considering modification to content, teaching and learning and assessment methods (UCT, 2021). Finally, the policy supports universal design principles that guide construction of accessible buildings, facilities, systems, information technology among other infrastructure (UCT, 2011).

These statements from the UCT Disability Policy are very important, and they should facilitate access and full participation for students with VI to education at UCT. Next, I will present the aim and objectives, research questions and sub-questions of this study.

### **1.5 Aim of the study**

The aim of this research is to explore the personal and/or professional viewpoints of participants to discover how they understand equitable access to the curriculum for students with VI at UCT. This will look at both what they consider to be ideal to achieve equitable access and also the current status of equitable access to the curriculum at UCT.

### **1.6 Objectives of the study**

The research questions are addressed by means of the following study objectives.

- To investigate to what extent UCT is seen to be achieving the educational goals of the UNCRPD within the curriculum and its relationship to UDL for students with VI.

- To explore staff and student understanding of the hidden curriculum, as an element of access to the enacted curriculum for students with VI at UCT.
- To explore the understanding of students with VI and staff as to how far they demonstrate digital literacies, an element of access to an inclusive curriculum.

## **1.7 Research question**

The main research question and sub-questions of this study are stated below:

What is staff and student understanding of equitable access to the curriculum for students with VI at UCT?

### **1.7.1 Sub questions**

1. To what extent are the UNCRPD and universal design for learning (UDL) considered in teaching and learning at UCT for students with VI?
2. What effect does the hidden and enacted curriculum have on students with VI at UCT?
3. How do digital literacies manifest for students with VI at UCT?

## **1.8 Outline of thesis chapters**

Below is an outline of how this thesis is structured. The structure below is a summary of what each chapter addresses to give an overview of the study at a glance.

### **1.8.1 Introduction chapter**

In this chapter, the reader is introduced to the background to the study. This background presents challenges students with VI face in universities and how the COVID-19 pandemic further exacerbated the challenges. It then briefly speaks to inaccessible ICTs and their impact on learning for students with VI. The chapter goes on to present the problem statement, rationale for why the study was undertaken and an introduction of the study site. It ends by stating the aim and objectives of the study as well as the research question and sub-questions of the study.

### **1.8.2 Literature review chapter**

This chapter presents the literature review with discourses around the research topic. The reader is introduced to what VI is, its implication in education and higher education and the barriers students with VI experience in higher education. The chapter then presents some of the strategies currently used to mitigate the barriers with their impact on the right to education for students with VI. The chapter finally covers what has been done at UCT to move closer to equitable curriculum and concludes why equitable access is important for students with VI.

### **1.8.3 Theoretical framework chapter**

The theoretical framework chapter introduces the four components of the framework guiding this study and how they link to one another. These are the right to education from the UNCRPD, universal design for learning framework, digital literacies and the enacted and hidden curriculum.

### **1.8.4 Methodology chapter**

This chapter covers the methods used for this study. A brief history of Q methodology is presented with steps that guide a successful Q methodology study. It then shows how the steps used for a successful Q study were applied to this study. The chapter then presents the participants of the study and how they were selected. Finally, it shows how the data from the study was analysed and the subsequent factor interpretation which included participant responses to survey questions and focus group discussions used to support the interpretation of the data.

### **1.8.5 Findings chapter**

In the findings chapter, this study presents the results of the research. Participant viewpoints on the research topic emerge as factors which came from three Q studies: one for all the participants (AP), one for staff only (SO) and one for students with VI only (SVIO). The chapter



then interpreted each factor with an outline of the factor, description of the factor and a name for the factor which at the same time represents the names of the themes for the study.

Findings revealed that an accessible curriculum is also a technical issue which requires time and resources. Academics, however, don't get this time and resources from their university due to pressure of meeting competing demands such as time for promotion and research. Findings further revealed that the university institutional leadership does not recognise the value of accessibility design from the start of curriculum development and support services provision. As a result, UCT adopt a retrofitting model where barriers to curriculum participation for students with VI are addressed when they occur rather than being proactive. These challenges then affect participation of students with VI as findings indicated that these are reasons why students with VI have partial rights to education, enjoy access to university but not full participation at university. Further effect of the barriers from this retrofitting fragments the participation of students with VI as findings revealed that their participation at university is not a uniform one but varies. Findings finally revealed that lack of assistive technology and testing of course sites adds to the complexity which affects the right to education for students with VI.

#### **1.8.6 Discussion chapter**

This chapter presents a discussion of the findings. It starts off with a discussion on the need for a better understanding of the right to education for students with VI with consideration of how the hidden curriculum impacts the enacted curriculum. It presents the argument to interrogate academics' hidden response to disability and how that translates into an understanding of the right to education for students with VI. It presents an academics' behaviour as an element of the hidden curriculum which can be informed by unconscious responses to disability. Anxiety about teaching students with VI may affect efforts to engage in developing an accessible curriculum. Therefore, this chapter indicates that interrogation of the hidden curriculum could offer points of support for academics to improve the implementation of the right to education for students with VI. It then presents UDL as a way to support change in deficit views of students with VI to an asset view. It also highlights challenges to the implementation of UDL.

The chapter then presents a case for the need for UCT and other universities both local and international to take a relook at their current operational model to that of designing the curriculum and support services planning with accessibility from the start. Finally, the chapter pulls all this together to present the understanding of staff and students at UCT on equitable access to the curriculum for SVI. It presents the understanding as a complex one but one that can be understood, mitigated, and supported with recommendations made in the conclusions and recommendations chapter.

### **1.8.7 Conclusions and recommendations chapter**

This chapter concludes the thesis by highlighting the main points again. It notes that the overarching point is that equitable access to the curriculum for students with VI is one that requires authentic engagement both from university management, academics, the disability services centre, the ICT department, admissions team, and the library team. It notes that design with accessibility from the start must be the new operational model for UCT and other universities and this must filter across all departments. It further concludes that this will not only benefit students with VI but all other students, thereby contributing to UCT vice chancellors' vision 2030 goal of unleashing human potential by facilitating full participation in the curriculum for all students at UCT.

It then makes recommendations based on the discussions which resulted from the synthesis of the findings. It makes several recommendations to UCT and other universities from the understanding of equitable access to the curriculum. It starts by indicating that access to the curriculum is not the end goal for students with VI but when they are able to turn their learning into opportunities when they graduate. With the barriers noted in the discussion chapter, it notes that full participation for students with VI is a complex one. Therefore, it recommends that a one size fits all approach will not work here. It further recommends that UCT's operational model needs to design curricula with accessibility from the start, and the same with support services at the university. It further recommends that the complexity presented in terms of students with VI's access to opportunities to acquire digital literacies requires consideration for the eight elements of digital literacies. To do this, it recommends using UDL framework. It lastly recommends that the institution needs to take the lead in this

to support academics and that it requires the working together of all departments and not just left to the disability services section of the university. Disability services section of the university may be limited by lack of knowledge of a discipline's unique ways in teaching and learning therefore a need for departments to engage with it to find accessible ways to include students with VI in the curriculum. To sustain these efforts, the chapter recommends monitoring mechanisms so that equitable access to the curriculum for students with VI is maintained.

## **Chapter 2 – Literature Review**

### **2.1 Introduction**

This chapter examines the literature surrounding the research topic by first looking at what VI is and then the implications of VI in education. Next it covers the implications of VI in higher education and then the barriers students with VI face in different contexts. After this, it will then speak to some of the strategies currently used to address these barriers. It will then end by speaking about what has been done at UCT with regards to equitable access to the curriculum and also clarify what is meant by equitable access to the curriculum.

Throughout this literature review, I will be using the term “students with VI” when I want to be specific to the type of impairment this study is focussing on. When I use the term “students with disabilities”, I am here referring to all students with disabilities of which students with VI form a part.

### **2.2 What is VI?**

In the health sector, categorisations from diagnosis of VI often determine services available to a person with VI and may also determine understanding of what VI is or definition of VI as Kran et al. (2019) noted. Naipal and Rampersad (2018) study from South Africa define VI as the reduction in the ability to see which cannot be corrected either through medical means or use of eyeglasses. The World Health Organisation defines VI based on three levels, namely blindness, severe VI and moderate VI (WHO, 2013; Kran et al., 2019). Blindness is someone presenting with a visual acuity worse than 3/60 (WHO, 2022). Severe VI is someone presenting with a visual acuity between 6/60 to 3/60 and moderate VI is someone presenting with visual acuity between 6/18 to 6/60 (WHO, 2022). Nasiforo’s (2015) study from Rwanda noted that visual acuity of 3/60 for example of a blind person means the person who is blind can see an object three metres away while a sighted user can see the same object 60 metres away.

The number of people estimated to be visually impaired in the world is about 285 million with 39 million of these being people who are blind and 246 million being people who have low vision (Pascolini & Mariotti, 2012). In the United States, prevalence for adults who are above 40 years old is 3.4 million and in South Africa prevalence for mild to severe VI was 4.82 million (Statistics South Africa, 2011; Chou et al., 2013; Naipal & Rampersad, 2018). Ninety percent of individuals with VI come from Africa and the developing world which Naipal and Rampersad (2018) attributed to the impact poverty has on people's ability to access health services.

On a global scale, VI is mainly caused by refractive errors, cataracts and macular degeneration which is similar for Africa but with the addition of diseases that impact the cornea and retina, such as cataracts (Naipal & Rampersad, 2018).

The implication for students with VI is significant because more than half of learning happens through vision and, as such, the lack of an accessible learning environment means a lot of information not adapted to students with VI learning is missed or delayed, impacting on learning (Naipal & Rampersad, 2018). The next section goes into further details of the implications of VI in education.

### **2.3 Implications of VI in education**

The implications of VI for students sometimes depend on whether the VI occurred from birth or was acquired later in life. The impact depends on the severity of the VI whether blindness, severe or moderate VI and also service provision available. The expanded core curriculum covered next highlights the impact of VI at schools.

#### **2.3.1 Expanded core curriculum**

Simalalo's (2017) study from South Africa highlighted that teachers at schools have noted the need for instruction that goes beyond just reading and writing for students with VI. If more than half of learning happens through vision as noted earlier, then for students with VI it means they may be missing out on a great deal of information at school.

What is taught at school, the basic academic subjects, are the core curriculum which all students must take (Simalalo, 2017). There are additional skills that support students at

school such as how to get around class, interact with teachers and other students, use technology to access the curriculum and independently navigate the school both academically and physically. These additional skills are incidentally picked up by non-disabled students but students with VI need deliberate efforts to teach them these skills to access the core curriculum and master skills in daily life (Simalalo, 2017). The additional skills form the expanded core curriculum (ECC) (Simalalo, 2017).

In Opie's (2018) study conducted in Australia, ECC was noted as an extension of the core curriculum that gives students with VI equal access to the core curriculum by focussing on knowledge and skills beyond the core curriculum. The knowledge and skills covered are in nine areas namely: functional academic skills, orientation and mobility, social interaction, assistive technology, career education, independent living, recreation and leisure, self-determination, and sensory efficiency (Lieberman et al., 2014; Opie, 2018; Simalalo, 2017).

ECC implementation, however, has had several challenges. Teachers have been reported to teach some skills and leave out others or prioritize some over others (Simalalo, 2017). In Simalalo's (2017) study, she reported that some teachers were not aware of the importance of ECC, and some felt it was a burden. In Opie's (2018) study conducted in Australia visiting teachers (VT) who teach ECC were sometimes not available due to time constraints and accessible curriculum materials sometimes were not available due to long delays in adapting the materials. Lieberman et al.'s (2014) study noted that teachers spend most of their time on the core curriculum with less time for ECC. Opie's (2018) study also indicated challenge of funding for VTs which affects their availability to teach ECC.

ECC should also be a collaborative effort among many stakeholders. The nine knowledge and skill areas noted above require expertise beyond the classroom teacher. Expertise is needed from stakeholders such as the teachers, parents, professional teachers skilled in assistive technology, orientation and mobility, administrators at the school and health professionals such as occupational therapists, psychologists and physiotherapists (Simalalo, 2017). Hamilton-Jones, Bethany and Vail (2014) noted though that a challenge to collaboration is power dynamics as to who teaches what which can negatively affect the delivery of ECC.

Despite these challenges, ECC plays a critical role in preparing students with VI to acquire skills and knowledge that would be needed in higher education where a student is expected to be independent and engage in social activities such as joining student clubs. Opie's (2018) study did indicate that VTs' attitude helps in ECC delivery. The studies mentioned above and several others all agree that more training for teachers in ECC is required and should be ongoing (Opie, 2018; Simalalo, 2017; Hamilton-Jones, Bethany & Vail, 2014). Lieberman et al. (2014) further suggested including ECC in teacher training to equip them with the knowledge and skills necessary for successful ECC implementation.

ECC is one of the many strategies used in an effort to fulfil the right to education of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) (UN, 2006). This convention has influenced the way in which VI is viewed within education. The development of inclusive education in South Africa is pertinent to how VI is understood in the study context as one significant response to the educational needs of students with VI.

### **2.3.2 Inclusive education**

The UNCRPD was ratified by 173 countries including South Africa and was adopted in 2006 (Callus & Camilleri-Zahra, 2017). It specifically elaborates on the implementation of the right to education with the provision of reasonable accommodation for students with disabilities (UN, 2006). In article 24, it says that state parties shall ensure that students with disabilities are able to access higher education without disability-based discrimination and on an equal basis with other students (UN, 2006). This means providing the necessary and appropriate modification within education for students with disabilities (Callus & Camilleri-Zahra, 2017). The end goal is the right to fully participate within education that accommodates students with VI learning needs.

In South Africa, due to the establishment of democracy in 1994, the country's constitution became the foundation for change in policies that moved away from the apartheid segregationist period (Dalton, McKenzie & Kahonde, 2012). In Chapter 2 of the Bill of Rights within the South African constitution, the right to basic education for everyone within the country including students with disabilities was established (Republic of South Africa, 1996).

However, lacking in the bill is the right to higher education which may have contributed to lack of support in terms of resources for students with VI at university. The constitution formed the foundation for the effort to abolish segregation in schools (Dalton, McKenzie & Kahonde, 2012).

Geldenhuys and Wevers (2013), Donohue and Bornman (2014) studies in South Africa revealed that segregation in schools was done based on race but also disability with schools attended by white children with disabilities receiving more resources than schools attended by black children with disability. As one of the measures among many to mitigate this, the South African government introduced Education White Paper 6: Special Needs Education. Building an Inclusive Education and Training System policy (EWP6) to support the needs of diverse learners who encounter barriers at school (Department of Education [DOE], 2001). This policy as reported by Dreyer's (2017) study in South Africa is the foundation on which inclusive education was built.

In general, inclusive education aims to support students with diverse learning needs by restructuring the curriculum, as well as teaching and learning and assessment methods in order to minimise barriers to learning and participation (Dreyer, 2017). Inclusive education was influenced through discourses in disability, difference and marginalisation, but it has since evolved to look at education for all students (Dreyer, 2017). Inclusive education addresses barriers to education arising out of but not limited to language, race, gender, age, ethnicity, poverty and disability (Dreyer, 2017). Inclusive education advocates a shift that all students can learn if they are supported and as such there is a need to relook the educational system in order to accommodate the diverse learning means of students (Dalton, McKenzie & Kahonde, 2012).

However, implementation has been poor due to challenges. First of all, there is an ongoing debate if special schools which cater solely for students with disabilities should be the way to go or rather mainstream schools where all students are accommodated including students with disabilities should be developed (Deryer, 2017). There is also the argument that both can be implemented. Teachers in mainstream schools in South Africa argue that they don't have adequate training to support students with disabilities. Government funding in South Africa



was also not adequate to support mainstream schools to include students with disabilities (Donohue & Bornman, 2014; Dreyer, 2017).

The situation is no better at special schools as evidenced by a report from Hodgson and Khumalo (2015) in South Africa which detailed gross neglect of children with VI in South African schools with some still on long waiting lists to be admitted to special schools due to the paucity of special schools in South Africa (Dreyer, 2017). Interviews from 22 high schools for visually impaired students in South Africa revealed neglect of the rights of students with VI to basic education and the indignity associated with this (Hodgson & Khumalo, 2015). The Department of Basic Education in South Africa cannot even provide an accurate number of students with disabilities who are out of school (Hodgson & Khumalo, 2015). However, Statistics South Africa indicated in their post school education and training statistics in 2021 in South Africa that there were 12, 877 students with disability of which 2,541 were students with VI in public higher education. There were 482 students with disabilities in special needs education in private colleges of which 86 were students with VI and 4,596 students with disabilities in special needs education of which 1,119 were students with VI (Department of Higher Education and Training, 2021). Almost 15 years after EWP6, and the challenge of funding still persists to address shortages in resources, assistive devices, and support staff (Hodgson and Khumalo, 2015). This funding situation was so dire that one school had to make a choice between providing what students with VI needed to write exams or going without electricity during the 2014 examinations (Hodgson & Khumalo, 2015). They opted to go without electricity. This lack of funding has created vacuums in availability of working computers and assistive software, trained educators who know how to use the computer and assistive software and plans for maintenance of these technologies (Hodgson & Khumalo, 2015; Le Fanu, Schmidt & Virendrakumar, 2022). Similar challenges were noted in Ghana and Nigeria where students with VI lagged behind due to limited support and where there was support, this came from their classmates who lacked expertise and often times were unwilling (Le Fanu, Schmidt & Virendrakumar, 2022). It means students with VI are then less equipped to go into higher education where they would rely on technology to succeed. The implication in higher education is discussed next.

## **2.4 The implications of being visually impaired in higher education on students with VI**

VI brings up a number of issues in higher education. One of the implications of having a VI in higher education has to do with physical access to the university. Access to the physical space of higher education remains a challenge for students with VI despite recent improvements such as installation of handrails to hold when going up a flight of stairs, elevators with voice feedback, ramps that aid easier access to buildings and better signage for students with low vision as reported by Mullins and Preyde's (2013) study in Canada and Simui et al.'s (2018)'s study across 16 countries. Student with VI need to access the physical space of buildings in order to attend lectures, participate in tutorials, exams and even non-academic activities such as student sport and activities. In Canada, improvements have been made for access to the physical space for students with disabilities including students with VI at university (Mullins & Preyde, 2013). Accessible physical spaces still pose barriers at many universities but these barriers such as poor signage for students with low vision are generally known (Siwela, 2017). Barriers that are less known are those to do with an inaccessible curriculum such as verbalising all content when teaching so students with VI also participate as indicated by Douglas and McLinden's (2004) study in England.

University engagement however goes beyond access to the physical space. Siwela (2017) study from South Africa considered access to university to be beyond access to physical buildings but to include access to the curriculum and everything associated with it. She concluded that one cannot separate access to the physical space of higher education from the knowledge, ways of knowing, social norms and values of higher education (Siwela, 2017). Knowledge and ways of knowing in the curriculum have to do with having the opportunity to understand, translate and reproduce knowledge via content, teaching, learning and assessment methods used at university (Arbee, 2012). Therefore, it means having access to all the information non-disabled students have access to, actively participating with other students and lecturers and the ability to demonstrate what has been acquired through learning (Arbee, 2012). For this to be fully achieved, academic pedagogy would have to be rethought and reimagined while still maintaining academic standards. A framework to reimagine pedagogy will be discussed in the theoretical framework section.

Another implication of visual impairment for higher education has to do with attitudinal reactions to students with VI while at university. Bakri's (2019) study from Saudi Arabia found that some faculty members had negative attitudes towards taking extra time to accommodate students with disabilities because they felt it created unfair disadvantages to other non-disabled students. As such, students with VI sometimes struggled on their own in order not to be seen as always asking for accommodations. Due to this lack of accommodation, students with VI learning needs are not considered which reinforces the negative view that persons with disability cannot perform like their non-disabled peers (Siwela, 2017). They are indeed capable but due to barriers at multiple levels, studying at university becomes difficult. The next section will speak to some of these barriers.

## **2.5 Barriers that students with VI experience in higher education**

A number of barriers at multiple levels confront a student with VI when they get to university. I will start with some barriers before university. If the student with VI is coming from a special school within South Africa, a school specifically designed to cater to students with particular disabilities, the first barrier is that they have not been prepared to integrate with university demands (Moriña, 2017; Fish-Hodgson & Khumalo, 2015; Simalalo, 2017). This is due to a number of challenges. For instance, in mainstream schools in Australia, lack of funding impacts on the number of visits visiting teachers (VT) specialised in ECC can make to the school (Opie, 2018). This makes it difficult to attend to individual needs of students with VI which prepares them for university. Not only this, but some of the special schools, which are supposed to be schools fully resourced to support students with VI, are also catering for other disabilities. Fish-Hodgson and Khumalo (2015) found that 12 out of the 22 schools catering to students with VI catered for students with other disabilities as well with limited resources. This meant that some students did not get the attention or training needed to pick up skills such as how to use assistive technology, a skill needed when they get to university. In the Australian study, it was also found that visiting teachers specialised in ECC often recommended assistive technology with little to no guidance on how to use it (Opie, 2018).

Some students with VI in Zambia also lacked skill in the use of braille which is a combination of raised dots that a student with VI feels with their fingertips to read content (Simalalo, 2017). This means that students with VI may come to university unprepared and at a disadvantage to their sighted peers. Despite the challenges above, students with VI in Australia got some level of individual attention and support at special schools in areas such as orientation and mobility (Opie, 2018). However, this would not be the case when they get to university. At university, all students are expected to be independent, discover their own learning strategy and be able to succeed with minimal support. Therefore, for students with VI, they have to learn to adapt to this new environment where that individual attention and support is not the norm but an exception as reported by Tom, Mpekoa and Swart (2018)'s study in South Africa. Also, the challenge is much more because participation at university mostly caters to those who can see (Tom, Mpekoa & Swart, 2018).

Higher education in Saudi Arabia has taken the route of establishing a disability service centre or unit that responds to the barriers of students with VI through reasonable accommodation. Reasonable accommodation is to meet the needs of students with disabilities so that they can participate fully in the curriculum as long as it does not create an unfair advantage, compromise academic integrity, lower academic standards or be an undue burden financially to the institution (Bakri, 2019; UN, 2006). This strategy has worked to at least raise awareness of the need to accommodate students with VI and has facilitated access and experience of the curriculum. The challenge, and the resulting barrier to this strategy, is that the inclusion of students with VI may not become a part of the cultural change of the institution if not done by all departments. Cultural change has to do with making lasting changes that address challenges to the curriculum for students with VI rather than quick changes to pedagogy only when barriers arise (Dolmage, 2017). In fact, McCowan (2016) noted that institutional culture usually serves dominant groups such as able-bodied students, making it difficult for non-dominant groups such as students with VI to succeed. As things are now, reasonable accommodation and accessibility challenges are usually left entirely to the disability centre as Butler et al. (2017) study in Australia revealed while the rest of the departments at the university don't see how crucial their role is to really make the institution accessible to students with VI. Therefore, Simui et al. (2018) note that a university's policy has to clearly state what different departments need to do to facilitate access and experience of the

curriculum for students with VI. A few departments in the United States have done this and a few are thinking of doing this (Skinner, 2007). The disability service centres are very useful in modelling inclusive teaching and learning practices and students with VI acknowledge this, but they are not enough to influence change in the teaching and learning culture at a university (Bakri, 2019).

Without this cultural change in teaching and learning, students with VI would be subject to temporary fixes to barriers to the curriculum instead of an institutional approach that proactively puts mechanisms in place to reduce curriculum barriers. Some of these barriers have to do with the learning management system where the content on such systems is partially accessible or not accessible at all. For instance, some content on a course site are not in a logical order. A logical order entails using heading levels appropriately so that a student with VI using a screen reader picks up the order of the content on the course site. Then some images on the course website don't have the right description detailing the meaning the image conveys for the screen reader to convey to a student with VI (Burgstahler, 2021). Further, some resources such as articles are scanned and uploaded to course sites as images which a screen reader cannot read, thereby rendering the information on that page inaccessible to students with VI (Burgstahler, 2021). Lastly, from a study in the United States, one finds hyperlinks to websites that are not active (Singleton & Neuber, 2020). Active websites are clickable and as such a screen reader will recognise them as links but when not active, when a student with VI calls up all links on a course site page, it won't come up. The student with VI then has to find the link manually which is time consuming (Singleton & Neuber, 2020).

Despite these online accessibility barriers, acknowledgement has to be given to the progress that has been achieved because the online provision of learning materials has made it easier for students with VI to get better access because, previously, the only option was to go to a physical library for access. Now, students with VI can access these materials using assistive technology and can email inaccessible materials to a disability services centre of the university to be made accessible (Butler et al., 2017).

Another barrier is the availability and cost of assistive technology (AT). Al-Harrasi and Taha's (2019) study in the United Arab Emirates noted that AT is any software or hardware that aids and enhances the ability of persons with disability in carrying out tasks they would otherwise not be able to do. Eguavoen (2016)'s study in Nigeria found that AT played a significant role in the performance of students with VI. This is because AT forms almost the only way students with VI can access educational materials. The cost of AT is very high and universities in the United Kingdom struggle to acquire funding to purchase both the hardware (e.g., computer, electronic magnifiers) and software (Jaws screen reader) and as such students with VI often seek other means to get access to them (Hewett et al., 2017; Butler et al., 2017). When available, it is usually in a disability computer lab at university which students with VI access when on campus. Therefore, learning is often restricted to the academic space while non-disabled students can continue to learn at home, office and even while travelling. Learning needs to continue in these different contexts and calls into question if universities have considered the impact on students with VI when they can't learn within these contexts.

It is very important to consider the contexts of learning that are emerging because these have implications of inclusion for students with VI. Under the ECC section of this review, I mentioned that learning that happens incidentally and how students with VI often lack access to this because most of this learning happens visually. Furlong and Davis (2012) study from the United Kingdom argued that, due to increasing use of technology at universities, the boundaries of learning between the university, home and social and leisure settings are becoming blurry. Learning now increasingly happens despite the context in which a student is found. Furlong and Davis (2012) note the unbundling of learning beyond the university context. This means to consider spaces beyond university where learning happens. Meyers, Erickson and Small (2013) recommend universities to acknowledge these learning spaces and support them. These spaces improve a student's agency and assist them become independent learners (Furlong & Davis, 2012). The implication for students with VI is that access to this incidental form of agency to become independent is then denied to them which may be interpreted as due to their impairment deficits. Therefore, learning that happens at home, work and leisure spaces plays a significant role and when it is not considered this creates barriers to incidental knowledge acquisition and academic knowledge acquisition for students with VI.

Further, access to AT is one thing, but having the skills to use them is another challenge for students with VI. At the United Arab Emirate universities, it was found that students with VI were more concerned about lack of training on how to use AT, which for a student with VI is similar to a non-VI student being worried about not being able to read and write (Alhammadi, 2016). It goes further. Not only is there limited training for students with VI but there is also a shortage of trained staff who know how to use AT (Alhammadi, 2016). Tom, Mpekoa and Swart (2018) state that due to this lack of training staff may not make the commitment to adapt their teaching pedagogy. If staff knew how AT works, they would have a better chance of being sensitised to barriers their curriculum would create for students with VI.

Another barrier is related to copyright limitations. Prior permission has to be sought to transcribe copyrighted content so students with VI can have access to it (Al-Harrasi & Taha, 2019). This means prior planning has to be done in order to avoid cases of copyright restrictions when a student with VI searches for articles in an online library database. The delay is even more significant if the article has to be transcribed into braille because one then has the additional time to braille the transcription (Al-Harrasi & Taha, 2019). Efforts are being made to alleviate these delays in copyright but it is still at the infancy stage. Stakeholders are engaging with copyright holders and also with content producers such as publishing houses (Harpur & Suzor, 2013). The Marrakesh Treaty (2013) seeks to facilitate an easier production and transfer of copyright material so it is available to persons with VI while safeguarding the copyright of publishers. Another such engagement is the limited exceptions rule that allows educational institutions to have access to copyrighted materials, but Harpur and Suzor (2013) reported that this effort has not had the desired broad-based access for students with VI. With the limited exceptions only certain materials are exempted from copyright rules leaving others inaccessible due to copyright infringement rules.

Another barrier after copyright is the usability of online library databases. Students with VI have to use the online library significantly to get their work done just as any other student. However, it has been found that the design, layout and features of some online library systems are not user-friendly (Al-Harrasi & Taha, 2019). Often times, just to get a relevant article, students have to go through four to five webpages which are mostly not accessible to

a screen reader. Students with VI will often then rely on either the library or peers to help them get the articles and this makes them lose the skill of becoming an independent researcher at university. They can't master the skill of online library database searching and as such lose valuable research search skills. (Nasiforo, 2015).

Accessible library websites and their navigation play a positive role for a student with VI. The confidence in the students with VI increases due to their self-efficacy in finding solutions from the library database without a third party's help as reported in Villanueva et al.'s (2018) study. There has not been an interrogation of the impact this inaccessibility has on the implicit emotions such as confidence, self-efficacy and self-advocacy of students with VI given that Villanueva et al. (2018) noted a need to see how the impact of them affects a student's participation at university.

Lastly, and probably one of the most challenging barriers is attitudes that student with VI often experience at university. The continuous assumption that the barrier to learning is because of the impairment of a student with VI, rather than the limitation of the curriculum to accommodate different learning means is problematic because it leads to unwillingness to even engage in accessible teaching and learning (Butler et al., 2017). This often translates to students with VI constantly fighting for their rights which becomes exhausting after a while. Chiwandire's (2019) study in South African noted that attitudinal barriers can go as far as thinking a student with VI cannot perform academically due to their impairment and, as such, academics may have lower expectations of students with VI.

These barriers are receiving greater attention at universities and next are some strategies that are being pushed to try address them.

## **2.6 Some strategies currently used to address the barriers**

In an effort to address some of these barriers, some schools are implementing a transition plan and from Aron and Loprest (2012) study in the United States, this is required by law such as the Individuals with Disability Education Act. This law just like Education White Paper 6 in South Africa recommends the working together of a team of both professionals and non-



professionals such as the students' parents/care givers, teachers, curriculum specialists, administrators, and any other professional who has experience working with students with VI to map out pathways to higher education (Simalalo, 2017). These professionals help the student to understand the difference between the individualised support they have been experiencing at school to what to expect in higher education especially in the area of support available for self-directed learning. Self-directed learning is how university students take charge of their own learning (Loeng, 2020). The team also tries to impress on the students with VI that they have a right to advocate for their inclusion when the need arises which most often does. The challenge with this solution is that, although the school may develop this through a transition plan, there is usually a lack of communication with the universities and, as such, Hamblet (2014) recommends communicating with the universities to ascertain how they accommodate students with VI.

McCarthy & Shevlin (2017) study in Ireland reported that this transition allowed students with disabilities to ascertain if they are taking the right subjects to transition to their desired discipline at university. Ireland also includes career guidance counselling which students with VI find beneficial as they are able to work out taking the right courses at university to reach their goals (McCarthy & Shevlin, 2017). These strategies all help, but it is worth noting that they would make greater impact if university staff also buy into them and work with the schools to understand the needs of students with VI that will enrol at their institution. Due to limited and sometimes no input from universities, it is not surprising that they may then not be familiar with ways to accommodate students with VI individually or through broad institutional methods (Cortiella & Horowitz, 2014).

Collaboration within universities also reflects similar challenges; however, in this case it is how a disability service centre at universities work with academic and non-academic departments. Simui et al.'s (2018) study across 16 countries noted that there is a lack of policy that clearly shows the roles different departments at the university can play in reshaping pedagogy for a curriculum that gives full access to students with VI. This area receives little attention and is often not discussed. If thought about, it is seen as not part of an academic's core job and, even when it is considered, academics feel that there is just no time and space in the curriculum to consider this (Bakri, 2019). As such, curriculum barriers for students with

VI are mostly left to the disability services section of the university to manage which often becomes overwhelming to the disability services centre in Saudi Arabia and sometimes what the centre offers may not be adequate for students with VI (Bakri, 2019). Simui et al. (2018) noted that this lack of shared responsibility maintains exclusive practices at university as the order of the day, despite advances to reduce curriculum barriers for students with VI.

However, considerations across the board of students with VI can have the advantage of reshaping pedagogy for the full participation of all students not only with VI but also other students (Burgstahler, 2021). Benefits such as verbalising content during teaching to accommodate students with VI allow other students to understand better and having captions on videos to accommodate hearing impaired students' benefits students whose first language is not English (Burgstahler, 2021). There has not been much effort to sufficiently impress this overall benefit for all students upon academics which might make them more willing to embrace ways they can also contribute to reasonable accommodation.

Impressing the benefits of accessible curriculum for all students on academics should not stop there but also include knowledge about how disability manifest. As Bakri (2019) noted, academics were more willing to engage to accommodate students with disabilities the more knowledge they gained about them.

When academics don't acquire this knowledge to improve their understanding, attitudinal barriers towards reasonable accommodation may become evident. This may affect the participation of students with VI at university through a reduction of skills in self-confidence, self-esteem, communication and self-worth (Bakri, 2019; Tom, Mpekoa & Swart, 2018). These skills are needed to succeed at university but have really not been researched and as such ways to interrogate their importance would form part of the theoretical framework discussed later.

Nasiforo (2015), suggested a way to mitigate attitudinal challenges. He noted that training of lecturers may increase positive attitudes towards students with VI because this allows lecturers to gain better understanding of how to include students with VI at university as opposed to when training was lacking. This is so because the less an academic knows about

an impairment, the more they may feel they are lowering academic standards when thinking of ways to accommodate such students (Simui, 2018).

Furthermore, Sniatecki, Perry and Snell's (2015) study in the United States of America noted that when departments are not involved in reasonable accommodation, they may feel that setting alternative assignments, tutorials or tests that meet the same objective of the course may put students with VI at an advantage over other students and as such do not consider them. For academics who see the value to get all departments involved in inclusive curriculum, Bakri (2019) noted that they often don't get cooperation from the disability service at their universities. Why this is so needs to be interrogated.

In addition to the lack of cooperation, faculty members from Saudi universities do come with their own belief systems, values, norms and standards and this consciously or unconsciously influences how they engage at university. Bakri (2019) postulated that the belief systems of academics may influence how they view reasonable accommodation. There would be a need to assess this in order to see what training is needed to get academics to interrogate belief systems that may cause barriers towards their implementation of reasonable accommodation. These are implicit areas that influence the curriculum and therefore ways to interrogate, understand and appropriately monitor how these include or exclude students with VI in the curriculum forms part of the theoretical framework.

Lastly, universities today mostly use learning management systems (LMS). These are online platforms that facilitate student to lecturer or student to student course engagements. Irvan et al.'s (2021) study in Indonesia noted that LMSs integrate many learning tools into one course page, such as forums and blogs for student and lecture engagements, assignment submission tool, live video conference engagement tools, chat feature engagement tool and tools to upload articles and lecture materials for students to access (Irvan et al., 2021). LMS also allow students to access course sites at any time, any day and anywhere as long as they have a computer and an internet connection. LMSs have afforded many students with disabilities with better access because previously they would have to get readings, lectures, videos and other learning resources through physical means by going to physical classes every day or to a physical library. However, it comes with its accessibility challenges for students

with VI. Teaching materials such as text, images, video, audio, and the course page itself can be inaccessible to screen readers used by students with VI. For instance, if an image is used and an alternative text (text that conveys the meaning of the image) is not included, a screen reader cannot make sense of such an image and as such the students with VI cannot understand why it was included. If videos are used with only visual information and no descriptive audio, then a student with VI gets partial or no meaning from such videos. Therefore, in order to address these barriers, the worldwide web consortium (w3c) developed the web content accessibility guidelines (WCAG), a standard for web accessibility which enhances the accessibility of LMSs (Worldwide Web Consortium [W3C], 2022). Universities are now adopting this standard through their LMSs. Even further, educational tools used at university, such as Microsoft Word (used for essays, assignments writing), PowerPoint (used for lectures and student presentations), PDF documents (used for articles and journals) have now developed basic accessibility checkers that at least provide a bare minimum for accessibility checks so students with VI using screen readers can access the same information (Microsoft, 2022; Adobe, 2022).

Another strategy that has helped with LMS accessibility is application of accessibility policies and laws. This has helped especially in the northern parts of the world. Although the UNCRPD (United Nations [UN], 2006) article 9 section stipulates access to information, implementation in online education has been slow to make this a reality. In the United States through its section 508 of the Rehabilitation Act, schools funded by government are required by law to make their online content accessible to students with disabilities (Smith & Basham, 2014). This has largely worked in the United States with universities that fail to comply being taken to court by students with disabilities for discrimination for an inaccessible online curriculum (Moon et al., 2012).

Furthermore, to mitigate the high cost of AT mentioned earlier in the barriers section universities have either had to look for loans, or students with disabilities themselves have had to secure bursaries in order to be able to bear the cost of AT (Butler et al., 2017). South African students do get some financial support from the National Student Financial Aid Scheme (NSFAS) for AT, meals, tuition transport human support and accommodation (National Student Financial Aid Scheme, 2023). While this may not cover everyone, it affords

a few students with VI access especially to devices, but it is worth noting that if the LMS is not accessible, then having a screen reader would not help that much (Moon et al., 2012).

Finally, having the skills to use AT was mentioned in the barriers section. To mitigate this barrier, universities are making the effort to train students with VI to use AT (Singleton & Neuber, 2020).

Despite the strategies indicated in this section, there are gaps from this literature review which this study seeks to address. Firstly, getting all departments to be involved in an inclusive curriculum requires an understanding to what extent the UNCRPD's right to education is facilitated at universities. This understanding would need to also look at what support measures are in place and as such how far UDL is considered as support.

Secondly, this literature review highlighted that learning happens in different contexts of university, home, social and leisure and as such if digital literacies have been considered for student with VI.

Thirdly this review noted a gap in the link between unconscious motivations of academics and attitudes towards an inclusive curriculum for students with VI. Therefore, a need to look at the effect which the hidden and enacted curriculum has on students with VI at university.

One of those universities, UCT, where this study took place, recognises some of the barriers and has been making efforts to address them. The next section will discuss what has and is currently being done so students with VI can have a better experience of the curriculum at UCT.

## **2.7 What has been done at UCT**

UCT experienced turbulent protests namely Rhodes Must Fall in 2015 and #Fees Must Fall in 2016. The Rhodes Must Fall protest was the result of dissatisfaction with colonial ways of knowing embedded in the curriculum but also dissatisfaction with the presence of the statue of Cecil John Rhodes, who epitomised the marginalisation of black South Africans through dispossession of lands, conquest and colonisation (Ndlovu-Gatsheni, 2018). #Fees Must Fall

came on the heels of Rhodes Must Fall which was as a result of a rise in student university fees and the students' cry that economically disadvantaged students would not be able to afford this increase and, as a result, the call for free education in South Africa (Pillay, 2016).

These two protests were pivotal for a re-energised call to decolonise the curriculum at UCT and with the advent of COVID-19 pandemic in 2020, an additional need to relook at equitable access to education for all students also became necessary (McKenzie & Karisa, 2021). UCT had begun the journey to provide better access to its teaching and learning (T&L) resources in 2009 when it started to explore open education resources (OER) (Hodgkinson-Williams & Donnelly, 2014). OER allowed UCT lecturers to make their T&L resource available in the public domain but under an intellectual licence called 'creative commons' so that the public could modify and reuse the materials (Hodgkinson-Williams & Cox, 2015). This paved the way for a different and open orientation among UCT academics in thinking of easier ways students and the public can access academic resources. However, OER was not necessarily accessible to students with VI because access here was about T&L resources that were available without students or the public having to pay for them. Despite this, it was a step in the right direction because it moved the T&L atmosphere at UCT to think of other ways for students, staff and the public to get access to UCT's resources.

With OER as a foundation, UCT then explored Massive Open Online Content (MOOCs) in 2014 which was seen as a way to broaden OER. MOOC production was done to give UCT academic programmes a global outreach with participants having access from all around the world because MOOCs were largely free to access except where in some instances the participant wanted to get a certificate of participation for which they had to pay (Czerniewicz et al., 2017). During this endeavour, UCT's fourth MOOC called Education for All: Disability Diversity and Inclusion from the Division of Disability Studies introduced to the UCT MOOC design team situated at the Centre for Innovation in Learning and Teaching (CILT) the need to make online T&L content accessible to students with disabilities. This was done with various MOOCs from the Division on Disability Inclusion in Education as reported by Czerniewicz et al.'s (2017) study in South Africa. This endeavour brought copyright challenges such as copyright limitations - a barrier mentioned earlier - to the foreground and as such a solution to mitigate this was to publish T&L resources using a creative commons licence which allows content to

be reused by the public for free based on the permission granted by the producer via the licence. This provided better access for people with VI, but this was generally to the few MOOCs that had been made available while the larger T&L resources used by students with VI at UCT remained largely inaccessible.

With the arrival of the COVID-19 pandemic in 2019, UCT like other universities was abruptly pushed into emergency remote teaching in 2020 due to inability of university students and staff to physically meet on campus. This further raised access issues for students with VI because students with VI could no longer physically access the Disability Services Centre at the university which helped to meet various accessibility needs.

Further, UCT CILT with UCT Disability Studies Division embarked on a redesigning blended courses project which aimed to improve teaching and learning through applying Universal Design for Learning (UDL) in order to make the online provision of the curriculum inclusive through flexible educational designs but not just for students with VI, but for all students (McKenzie & Karisa, 2021). This project which is running from 2021 to 2023 hopes to include inclusive practices from the design of the curriculum rather than requiring accommodations after courses are developed and the first few courses are already being piloted (UCT, 2021). Academics who are piloting this project are also supported through EdTech advisors, who are postgraduate students trained in creating accessible online T&L materials (UCT, 2021).

With these solutions from UCT which are definitely in the right direction, the groundwork is being laid for a better understanding of the implementation and inclusion of students with VI into the university curriculum. However, does all this enable students with VI to gain equitable access to the curriculum? It would definitely help get to the end goal but as stated under the gaps section of this literature review, all departments are needed in this effort, and also a look into the lack of training of academic staff in teaching and learning methods including the implicit ways they influence the curriculum. Copyright has to be engaged further because it brings about barriers for students with VI. Accessibility of university electronic library database has to be looked into because it is one of the most important tools at university for students with VI and the barriers presented by new technology need attention but also

checking why the IT department at the university doesn't pursue an active role in the implementation of WCAG.

Therefore, given these gaps, the barriers highlighted and the current efforts by UCT, this study asks the question: How do students and staff at UCT understand equitable access to the curriculum for students with VI?

Bellei and Cabalin (2013) note though that to evaluate if students with VI's right to education is guaranteed requires a look into equitable access to quality education. Therefore, the next section will introduce what equitable access to the curriculum entails.

## **2.8 Equitable access to the curriculum**

Equity in higher education has been an important topic for some time. Mzangwa (2019) notes in their study about the effects of higher education policy transformation in post-apartheid South Africa that the reason for this focus is because in earlier times higher education catered to a certain category of people. Non-white students in South Africa (black, Indian, coloured) were denied access to elite institutions as reported in Wawrzynski, Heck and Remley's (2012) study in South Africa. As inclusion of women, blacks, people with disability and students from lower socio-economic backgrounds became necessary, equitable access to higher education became important.

Equity, though, is not a straightforward concept as various authors report. First of all, equity is different from equality. McCowan's (2016) article on three dimensions of equity of access to higher education in Brazil, England and Kenya notes that equality has to do with giving the same thing to everyone irrespective of their gender, race, ability, or socio-economic background, for example, giving every student in a class a physical book including students with VI. That is equality but the student with VI is then disadvantaged due to the inaccessibility of physical books. Equity on the other hand, is closer to fairness which means giving opportunity to students who, as indicated earlier, had been excluded from university due to their context such as race, gender, ability, socio-economic background (Essack, 2012; McCowan, 2014; McCowan, 2016).



However, equitable access is not just about access to university, for a student also has to be set up for success at the university. For instance, if a black South African Xhosa student is accepted at a university whose medium of instruction is exclusively in English, such as at UCT, then provision has to be made to accommodate them. Yes, the student has now been accepted even though he is black, but he still faces the barrier of engaging fully in the curriculum in English which is not his mother tongue. Therefore, equitable access needs to go further to provide equality of opportunity which means providing all the necessary educational tools and support that gives this student the same opportunity as other students (McCowan, 2016). For instance, it would mean that a student with VI not only is accepted at university but that content, teaching and learning methods, assessment methods, and support structures have been considered using the components of the theoretical framework to be covered in the next chapter.

Equitable access also needs to consider availability of space at a university for marginalised groups. McCowan (2004) noted that equitable access is not realized if there are insufficient places for students with VI in cases where universities put a cap on the number of students with disabilities to be admitted. There might be legitimate reasons, such as an institution not having enough qualified academics to teach students with VI or not enough assistive technology, but this would then still constitute discrimination and lack of equitable access. Therefore, equitable access means access to the university for marginalised groups such as students with VI, getting a place in that university for them to study, availability of content, teaching and learning methods, assessment methods and support to succeed at university. McCowan (2016: 647) states, they *“are able to convert that learning and the resulting qualifications into meaningful opportunities afterwards”*.

A further layer is needed for equitable access to the curriculum. Equitable access also indicates looking at the challenges not only those students with VI face but also the challenges that academics and support staff who engage with students with VI at university face for them to have equitable access to the curriculum.

Therefore, staff and student perspectives become crucial for equitable access for it is only when the complexity that students with VI face is known with practical steps taken to address

them that students with VI get equal access to opportunities at university. Only then can students with VI convert learning to meaningful opportunities as stated earlier.

To attempt to understand equitable access, this study is guided by a theoretical framework which combines four conceptual frameworks (UDL, digital literacies, UNCRPD, hidden and enacted curriculum) to explore participant views on the research topic. The next chapter will introduce the theoretical framework of the study.

## **Chapter 3 – Theoretical Frameworks**

### **3.1 Introduction**

This chapter describes the theoretical framework used to explore participants understanding on equitable access to the curriculum for students with VI. It will first speak about how the theoretical framework was formulated and then go into more detail about what constitutes the theoretical framework, why it was chosen and how it will aid in answering the research question.

### **3.2 Formulation of the theoretical framework**

Higher education today is more and more enhanced by technology and while technology has brought benefits in terms of access to the curriculum for students with VI, it has also proved to be a solution that requires careful implementation. With the increasing use of technology in teaching and learning, the online curriculum can be engaged in the different contexts of the university, home, work or leisure. Learning is no longer confined to the four walls of a lecture hall. Therefore, a framework that would adequately help to guide exploration into the issues and norms that students have to navigate in different contexts while engaging with the online curriculum is needed. Digital literacies is an approach and the first component of the theoretical framework that would guide this exploration by foregrounding the eight elements of digital literacies to explore the multiple digital literacies students need to navigate in different contexts to adequately engage with the curriculum, and to examine whether access to opportunities to develop and acquire these digital literacies exist for students with VI (Belshaw, 2014).

Acquiring these digital literacies means engaging with the second component of the theoretical framework called the enacted and hidden curriculum which will be in the background (Luke, Woods & Weir, 2013; Villanueva et al., 2018). This will allow the exploration of the opportunities students with VI have access to in order to see if these opportunities satisfy what the enacted and hidden curriculum make possible. It will also highlight barriers that exist.

The enacted curriculum follows a pedagogy and as such the third component of the theoretical framework called the Universal Design for Learning framework will be used to explore opportunities and limitations that exist within the pedagogy employed with the curriculum for students with VI (Centre for Applied Special Technology [CAST], 2021). At the background of this exploration would be understanding of participants' views on how university pedagogy upholds the right to education of the UNCRPD which constitutes the fourth component of the theoretical framework (UN, 2006).

The next section will now expand on these four components of the theoretical framework.

### **3.3 Literacy**

Literacy is often thought of as the ability to read and write (Lemke, 2002; Belshaw, 2014). Instead, literacy is about reading for understanding and writing to be understood by others (Belshaw, 2014). This makes it an inherently cognitive process; however, technical views of literacy are often reductionist (Belshaw, 2014), limiting literacy to a narrow process that is disconnected with the context where it is happening. Literacy is usually done with a purpose such as to communicate with others (Belshaw, 2014; Perry, 2012). It uses tools such as pen and paper, communicates content and is a social practice manifesting in various ways and purpose such as a reading group to pass an exam (Belshaw, 2014; Perry, 2012).

There are different perspectives about literacy which are discussed below. The autonomous model is one such technical view which notes that literacy is a set of neutral skills, disconnected from its context, that can be applied to any situation and therefore solely refers to an individual's ability to read and write by encoding and decoding (Perry, 2012; Lankshear & Knobel, 2007).

The linguistic perspective differs from this technical view. Perry (2012) states that literacy is also a form of the use of language and language is usually attached to a particular cultural context. Cultural contexts are made up of elements such as power, politics, values and attitudes (Perry, 2012). Therefore, literacy as a form of language is seen as a social practice. For example, a student in a social group such as a book club reading a book from an author,

writing down his/her understanding is considered to be engaging in a literacy practice (Belshaw, 2014). This student probably discusses the book she is reading with her group, drawing conclusions from the discussions. Therefore, this goes beyond the reductionist view of the autonomous model described earlier, where this social aspect is usually thought of as a bolt-on to literacy and not a core part of literacy (Belshaw, 2014). The ideological model which states that literacy is a set of practices that exist in specific contexts with cultural and power structures also aligns with the view that literacy goes beyond reading and writing (Perry, 2012). Therefore, both Belshaw and Perry make the case that there is more to literacy than reading and writing.

Bhatt (2012), Lankshear and Knobel (2007) states that literacy is contextual because it embodies both writing and reading within patterns of behaviours that come with attitudes and values. He spoke of a student whose literacy practice involved her personal, social and academic spheres. Such a student forms friendships with other classmates during their face-to-face classes. They may maintain this friendship through social media such as Facebook. Such friendships allow her to ask questions related to the course and in turn help her classmates. She gravitates to using WhatsApp to get immediate responses while studying because she knows certain friends are also online studying. Some of her friends may also be work colleagues and at work she uses her work email to sometimes share articles she finds relevant to discussions they had. In all this she navigates through contexts of her home, university, social and work environments. These literacy practices are complex, not linear, shaped by behaviour, attitudes and values (Bhatt, 2012). In all these contexts, questions arise how a student with VI may be excluded from learning activities which we all take for granted as natural.

The need to see students as actors within multiple contexts and not just in the context of university can therefore not be over emphasised (Perry, 2012). What is emerging is that literacy happens in different contexts and involves social practices that are not just about reading and writing and, as such, there is a need to consider these contexts in terms of how accessible they are for students with VI and how that impacts on their ability to gain literacy. What is also emerging is that there is not one definition of literacy and as such it is more complex than the ability to read and write.

Adding to this complexity is the use of technology at universities. As such, it would be appropriate to also look at how literacy happens for students with VI in today's university which incorporates a lot more technology into teaching and learning. This complexity and the literacies involved is what Belshaw (2014) describes as digital literacies.

### **3.4 Digital literacies**

The third industrial revolution brought computerisation and web-based interconnectivity which universities are still adjusting to and adopting in their teaching and learning activities (Penprase, 2018). To define digital literacy, Meyers, Erickson and Small (2013) note that it is a complex concept. They say that digital literacy is the ability of people to use digital tools to manipulate information from its identification, evaluation, processing and reproduction within digital environments to a wider conceptual space applying various skills shaped by norms and practices. They note that this happens in everyday life whether socially, academically, at work or when collaborating with others.

Littlejohn, Beetham and McGill (2012) like Meyers, Erickson and Small (2013) concur by noting that digital literacy is shaped by a student's previous know-how. This know-how is influenced by dispositions such as how confident the student is, their belief in themselves and the context where digital literacy is taking place (Littlejohn, Beetham & McGill, 2012).

These dispositions are elements that form part of the eight elements of digital literacies proposed by Belshaw (2014) (see below), which he claims capture the complexity of digital literacies. Belshaw hesitated to give a definition of what digital literacy is because he noted that it is closely tied to the context where learning is happening. Therefore, he argues, just as Meyers, Erickson and Small (2013) argued, that the culture, language and the kind of community where learning happens form the context and as such determine what digital literacy means for such a community which includes people with disability.

Belshaw (2014) further noted that there are multiple digital literacies and not just one digital literacy happening at any one time. Littlejohn, Beetham and McGill (2012) and Meyers, Erickson and Small (2013) noted the same with suggestions of not just one capability of digital

literacy but several such as visual literacy, media literacy, and information literacy. Therefore, Belshaw (2014) postulates that digital literacy is not a singular word but plural. This study's definition of digital literacy is therefore based on Belshaw's (2014) argument of multiple forms of digital literacy and as such, adopts digital literacies in the plural.

Furthermore, in order for students to gain digital literacies, they would need to develop skills and attitudes in what Belshaw (2014) called the eight elements of digital literacies below:

1. **Cultural:** Digital literacies happen within a context; therefore, understanding the cultural element helps clarify the context where digital literacies are happening. Culture is closely tied to issues, norms, and habits and therefore the cultural element is also about being immersed in different digital environments where these manifest and how they reduce or create barriers for students with VI (Belshaw, 2014).
2. **Cognitive:** As much as digital literacies have a social and contextual part, they are also about expanding the mind of students (Belshaw, 2014). To develop this means students having the ability to use a range of devices, software platforms and interfaces. Further, it also means all of these coming together through immersion rather than a sequential, step-by-step process. This is because, as Belshaw (2014) argues, literacy and learning do not actually happen in a sequential linear manner but in a progressive non-linear form. Therefore, students would need to be embedded or immersed into different digital environments in order for the mind to be expanded.
3. **Constructive:** This element speaks to the way digital tools are used appropriately to enable constructive social action (Belshaw, 2014). It is the way we build on each other's works to create social cohesion through meaning and as such advance knowledge further. Therefore, for this element to be valuable to students with VI, the works of others would need to be in forms that are accessible and malleable for them to build upon.
4. **Communicative:** This element cuts across all the other elements because for literacy to happen communication is always involved (Belshaw, 2014). For effective communication to occur using a particular digital technology involves knowing, understanding and applying certain norms and assumptions (Belshaw, 2014).

However, the medium which communication uses for its transmission affects how students with VI make meaning of what has been communicated.

5. **Confident:** This element is about communities that help build confidence. Belshaw (2014) says developing the confidence element is about solving problems and managing one's learning in digital environments which may be enhanced within a community that accommodates different ways of learning. A student with VI's ability to navigate different digital literacies helps increase their confidence to respond to academic tasks and as such their confidence to gain literacy.
6. **Creative:** This element is about the creation of something new that has some kind of value (Belshaw, 2014). What counts as valuable however depends on the context. For this element to be developed, Belshaw notes that it requires a level of freedom which embraces randomness and discovery with sense making bringing it all together to add value in a specific context. For students with VI, this means the freedom to move between accessible digital environments within different contexts to create things of value.
7. **Critical:** The critical element involves reflecting about your own digital literacy practices such as looking at what skills led you to the current practice you have adopted in digital literacies and also how your practice affects others (Belshaw, 2014). Belshaw says it is about analysing the power structures and assumptions behind literacy practices. This element is important in the identification of inclusive practices for students with VI. This has implications because with each new way of doing things, new barriers could emerge for a person with disability. Therefore, it helps to determine who the likely audience would be for a university curriculum that is accessed online, who is included and who is excluded (Belshaw, 2014).
8. **Civic:** *"Preparing people to be able to fully participate in society in my mind, is the goal of literacies"* (Belshaw, 2014:58). This statement from the civic element is about how digital literacies and its practices support the development of civil society. It is linked with the critical element because it looks at the end goal of digital literacies. Belshaw says it is about how we self-organise using digital literacies. Therefore, this element would facilitate measuring the impact of the full participation or lack of for students with VI in the curriculum by looking at their level of participation, where the



bottlenecks are in the digital environments and the literacies happening in those environments.

These elements point to the following questions: In communicating the curriculum in today's universities to students with VI, has there been consideration and cognisance that they navigate multiple digital literacies? If multiple digital literacies are needed to gain literacy in today's university, how accessible are opportunities to develop and acquire them for students with VI? Do students with VI spend more time navigating challenges accessing these literacies, time that would otherwise have been better spent on learning at university?

Finding out opportunities to acquire these digital literacies for students with VI means better understanding of how the curriculum is accessed because the purpose of digital literacies is to enhance full participation in the curriculum. The next section will speak about the second component of the theoretical framework which is the curriculum.

### **3.5 The nature of the curriculum**

The word 'curriculum', according to He, Schultz and Schubert (2015), generally refers to use of academic books and materials; however, they note that this view no longer represents the true picture of the curriculum today. Whyse, Hayward and Pandya (2016) see it as what is being studied, presented as a syllabus with objectives and outcomes that guides students. Luke, Woods and Weir (2013) go further to see curriculum as the sum total of resources, both intellectual and scientific, cognitive and linguistic, textbook, the content, assessment methods, and official and unofficial aspects that come together in teaching and learning involving students, lecturers and in some ways the community within classrooms and other learning environments. Curriculum also embodies certain ways of knowing, such as that of able-bodied people who dominate and as such also privileges able bodied students which often leaves students with disabilities excluded (UCT, 2018). This domination centres around what Dolmage's (2017) called 'ableism' that manifests in entrenched representation of knowledge resulting in a curriculum which is mainly designed for able bodied students. Therefore, it becomes important to consider epistemological access to the curriculum (Siwela, 2017). Epistemological access has to do with curriculum that caters for the learning means of

diverse students including students with VI not just in terms of physical access but also in terms of content, teaching and learning methods (Siwela, 2017; Muller, 2014). This study first looks at the forms in which the curriculum manifests such as the official curriculum, the technical curriculum, the enacted curriculum and the hidden curriculum (Luke, Woods and Weir, 2013).

### **3.5.1 The official curriculum**

The official curriculum according to Priestley (2019) is the guide, the direction of the curriculum that prescribes what is to be taught. It therefore specifies the intentions, dreams, vision and probably the mission of the university such as how human knowledge and subjects are mapped, as well as the divisions and categories used to specify what the curriculum will be at a certain time and in a certain context (Luke, Woods and Weir, 2013). This form of the curriculum is at an ideological level and therefore is like a summary or an outline of the teaching and learning that is to occur at university. While it is a very important aspect of the curriculum, it is not the day-to-day experience of it and may or may not manifest in the day-to-day experience of the curriculum.

Luke, Woods and Weir (2013) assert that any attempt for the official curriculum to dictate what goes on in the classroom may constrain certain practices and processes such as how diverse students are accommodated and as such may negatively impact the experience of the curriculum on a day-to-day basis. They suggest it remains the map but relate the day-to-day experience of the curriculum to the enacted curriculum. Therefore, this is not the aspect of the curriculum that this study will focus on because the official curriculum is not always the experience within classrooms.

### **3.5.2 The technical curriculum**

The technical form of the curriculum, on the other hand, indicates the scope that the curriculum is to cover (Luke, Woods and Weir, 2013). It determines, from out of the sea of knowledge out there, which knowledge should be prioritised and as such be included in the curriculum. It dictates what dominant ideologies, discourses, discipline and knowledge paradigms, cultural narratives and values feature in the curriculum (Luke, Woods and Weir,

2013; Connelly, He & Phillion, 2008). Therefore, the technical curriculum chooses from the unlimited possibilities of knowledge present in the official curriculum, what will constitute important and valued school knowledge (Luke, Woods and Weir, 2013).

This form of the curriculum is also not the final content that is taught, nor the day to day experiencing of the curriculum but is the selected knowledge to be taught and how that knowledge is interpreted which has enabling or disabling ways in the face-to-face interactions in classrooms. For example, if the technical curriculum recommends teaching diversity in all disciplines at the university, then this will be an area the university will prioritise. Resources will be made available to support all disciplines to teach diversity. Therefore, the technical curriculum sets the priorities for what is to be taught.

Like the official curriculum, the technical curriculum should not describe the entire curriculum, but rather guide it, otherwise it becomes too prescriptive and as such may not reflect the local context (Luke, Woods & Weir, 2013). This form of the curriculum is also not what this study will be focussing on because it does not translate directly into the day-to-day experience of the curriculum, but its effect on the enacted and hidden curriculum will be highlighted.

### **3.5.3 The enacted curriculum**

The enacted curriculum is the part of the curriculum that occurs every day. This is the experiencing of the curriculum, the day-to-day discourse in student and teacher interaction and relationships (Luke, Woods & Weir, 2013). This is the part that is known as the classroom curriculum because it demonstrates what is actually taught in class. (Priestley et al., 2021). This curriculum is the doing part and as such the part of the curriculum that should reflect more of the context where it is situated especially with regards to the diversity of students who engage with the curriculum. It is the aspect of the curriculum which needs to value each individual student, support their engagement with one another and with lecturers, foster relationship building and support how students co-create knowledge (Luke, Woods & Weir, 2013). Therefore, this aspect of the curriculum is part of what this study focusses on because this is the aspect that has direct implications for students with VI.

### 3.5.4 The hidden curriculum

The hidden curriculum is defined as the unwritten, unofficial, unintended values, implicit attitudes, knowledge and behaviours, which are conveyed or communicated without awareness or intent at university (Villanueva et al., 2018). It functions in the unconscious, non-verbal spaces of the classroom and that is why it is hidden (Villanueva et al., 2018).

Generally, in universities, we always have the formal curriculum which comprises the official, the technical and the enacted curriculum. In between these, the hidden curriculum is always present. (Villanueva et al., 2018). Students and lecturers are usually not aware of this form of the curriculum but through it students gain knowledge, skills, attitudes, opinions and values apart from those stated in the formal curriculum (Sagan, Uyangor & Kervan, 2019). An example of the hidden curriculum is when a lecturer always uses group activity in class thereby implicitly teaching or reinforcing the importance of collaboration or working in teams.

Segun, Uyangor and Kervan (2019) noted that as lecturers at university implement the formal curriculum they intentionally or unintentionally reflect their own views, feelings, opinions, and perspectives on the teaching process. Students pick up these hidden lessons and, as Villanueva et al. (2018) notes, the mind of students can process a lot of that implicit information in an unconscious manner and, over time, these hidden lessons slip into the realm of conscious reflection to become norms that students abide by.

The hidden curriculum also impacts on the experience of students at university. Özdemir (2018) notes that there is a relationship between the hidden curriculum perceptions and students' university quality of life perceptions. So, he noted that as the perceptions of students in terms of hidden curriculum increases, although this perception is at an unconscious level, the perceived university quality of life also increases which means students connect better with a sense of belonging to the university which in turn increases their confidence in themselves (Özdemir, 2018). It is therefore worthwhile to also explore this aspect of the curriculum even if hidden because it also shapes the context of the environment at university.

Therefore, this study also focuses on the hidden curriculum. It is often tied to negative issues such as discrimination against students with VI due to negative attitudes either from lecturers or other students but Villanueva et al. (2018) note that if the hidden curriculum is used and attended to appropriately, it can yield a positive outcome in the interrogation of the curriculum so that it is more equitable to students with VI. The argument being developed here is that in looking at both the enacted and hidden curriculum alongside the digital literacies that enable them, a better understanding of the complexities existing at university for students with VI in gaining literacy may be gained. The enacted and hidden curriculum would then need to carefully consider the kind of digital literacies they prescribe and encourage, and the kinds of tools and content knowledge that are used. These influence the day-to-day delivery of the curriculum to students with VI.

### **3.5.5 The online curriculum**

Although the online curriculum is a subset of the curriculum, it forms an integral part of teaching and learning in today's university (Liu, 2005). The online curriculum involves use of a computer and the internet and is often thought to reduce costs and increase quality (Angiello, 2010). This has become even more evident due to COVID-19 where universities had to shut down physical engagement for online options to avoid the spread of the disease. Therefore, more focus is needed to ascertain in what ways the online curriculum limits the autonomy of students with VI. The online curriculum also allows for more flexible time as students learn at their own pace (Angiello, 2010). Educators are often seduced by the technology in the online curriculum and pay less attention to its effectiveness, quality or pedagogical use (Angiello, 2010). This should require a careful consideration of who may be included or excluded such as students with VI.

Although this study is speaking of the curriculum, it is looking more into the online curriculum as a subset because there is an increase in its inclusion into higher education which may negatively impact on access for students with VI and therefore diminish their confidence and dignity at university. While the move to online brings benefits such as the access beyond the classroom, at any time or place, challenges also emerge which become very significant. The

move to the online curriculum is very challenging for students with VI in terms of time management (Basham et al., 2015). If aspects of the online curriculum are not accessible, this immediately means a student with VI has to navigate various barriers to accomplish their tasks (Singleton & Neube, 2020). A simple task like finding articles to complete an assignment which may take a non-disabled student a day to complete may take a student with VI a week because, as mentioned in the literature review, the intermediate online library websites are not accessible (Singleton & Neube, 2020). Even when some are, the article may be a pdf that has been scanned as a picture (Burgstahler, 2021). Definitely, moving online brought the benefit of not having to go to a physical library which is very challenging for a student with VI but the online space then also brings its own challenges (Nasiforo, 2015). It means students with VI have to depend on others to progress through university (Nasiforo, 2015). This impacts their dignity and respect for their way of learning.

Therefore, ethically, in order to respect the dignity of students with VIs at university, the online curriculum content, how the face-to-face classroom is organised and managed and the teaching and learning methods used will all have to be adapted to accommodate different ways of learning (DOE, 2001). Finding models or frameworks that enhance inclusive teaching and learning would enhance delivery of the enacted and hidden curriculum to students with VI. One such framework which this study is using is the universal design for learning framework.

### **3.6 Universal Design for Learning**

The Universal Design for Learning (UDL) is derived from the architectural discipline of universal design which is about the design of products, services and environments to be usable for all (Chiwandire, 2019). It is an approach to integrate accessibility features into all products, services and the environment to the benefit of the greatest number of people. UDL follows the same concept as universal design from architecture but targets the design of information and an accessible pedagogy to meet individual needs of students (CAST, 2022).

UDL, therefore, is used as a framework in this study because it provides a means to understand the day-to-day teaching of the curriculum and can promote inclusive teaching and

learning to accommodate all students including students with VI. It is a framework that may lead to epistemological access for students with VI.

UDL recommends three principles:

1. **Multiple means of representation:** Allowing for alternative presentations of essential concepts. Various methods of presentation can allow the student to learn the information in their preferred method (Coffey, 2019), e.g., alternative lectures, textbooks, diagrams, audio tapes, videos (Coffey, 2019).
2. **Multiple means of action and expression:** Allowing students multiple means of demonstrating mastery of the material, e.g., a student who finds written expressions difficult might turn in a report, write a play, or develop a project to demonstrate learning (Coffey, 2019).
3. **Multiple means of engagement:** Matching varied skill levels, preferences and interests by allowing for options. Students choose their preferred method of learning new material, e.g., a student might learn vocabulary by playing a game in a race against the clock, while another might create stories or even artwork to incorporate the new words (Coffey, 2019).

With UDL framework promoting access and understanding to the curriculum and digital literacies enabling opportunities to the hidden and enacted curriculum, the final component, which is the UNCRPD, will help to specifically determine barriers that exclude students with VI from full participation at university. This is important because, given that students with VI follow unique ways of learning, the convention will help make sure recommendations are those that actually benefit students with VI and advise universities on better ways for their full inclusion in the curriculum. Most importantly, it would help fine tune the complexities to create awareness and hopefully give a sense that inclusion is always an ongoing process, but which gets better with time.

### **3.7 Right to education**

The last component of the theoretical framework, which helps this study assess to what extent the right to education for students with VI is upheld, is the UNCRPD briefly introduced in the literature review chapter (UN, 2006).

The convention not only covers right to education but also right to health, housing, food and even the right to life because, with education, the knowledge, skills and opportunities to live a meaningful life become attainable (Callus & Camilleri-Zahra, 2017). Further, education or lack of it may mean access to a life that is socially, intellectually and economically fulfilling, or one where these are lacking or diminished (Aron & Loprest, 2012).

The importance of education for all students has been enshrined as a basic right (Universal Declaration of Human Rights [UDHR], 1948). UDHR lays the foundation and support for all students, including students with VI in article 26 that states that everyone has the right to education and that higher education should be made equally accessible to all students (UDHR, 1948). However, enjoyment of this basic right in the UDHR is not specific enough to protect the rights of people with disability.

South Africa ratified the UNCRPD in 2007 which meant committing to the implementation of the articles of the UNCRPD, promoting the rights of people with disability by reviewing existing policies, legislation and programmes to ensure they comply with the UNCRPD (Visagie, Scheffler & Schneider, 2013; Aldersey, 2013). Ratification also means that South Africa would submit reports that demonstrate compliance with the convention as well as factors affecting implementation of the convention (Aldersey, 2013). The effort has begun with a number of policies such as the Department of Social Development White Paper on the rights of persons with disabilities which aligns with the UNCRPD (Department of Social Development [DSD], 2015). However, implementation is yet to guarantee meaningful access to the curriculum. Therefore, this component of the theoretical framework facilitated an exploration of the teaching and learning practices recommended by UDL in order to determine how they uphold the right to education.



This theoretical framework therefore guides the exploration of how students and staff at UCT understand equitable access to the curriculum for students with VI by using the framework's hidden and enacted curriculum component to explore the opportunities that exist for students with VI to access the digital literacies component that enables the curriculum. In doing this, the UDL component is used to suggest or recommend inclusive teaching and learning practices and the UNCRPD component highlights areas where recommended UDL practices uphold the right to education for students with VI.

These four components also demonstrate how complex the research topic is and that consideration for ways to understand equitable access to the curriculum for students with VI has many moving parts. It therefore, indicates that for an understanding of equitable access to the curriculum to be comprehensive, the four components need to be considered and as such this study makes the case of what is required for an understanding of the complexity of equitable access to the curriculum for students with VI. The combination of the four components formed the theoretical framework for this study.

### **3.8 Conclusion**

In this chapter, I covered the four components of the theoretical framework used in this study, namely digital literacies, universal design for learning, right to education of the UNCRPD and the hidden and enacted curriculum. I noted that literacy is beyond reading and writing and that with the addition of ICTs in today's university engagement there is the need to look if students with VI have access to opportunities to acquire digital literacies for curriculum engagement. The eight elements of the digital literacies component help to show areas where students with VI struggle in today's curriculum. Universal design for learning framework is used to suggest flexible ways to mitigate the challenges whether from the hidden curriculum or enacted curriculum. The goal is to promote and maintain the right to education as recommended by the UNCRPD for students with VI.

## **Chapter 4 – Methodology**

### **4.1 Introduction**

In this chapter, I introduce the rationale for the research paradigm chosen for this study, the methodology, its history and how I applied the methodology to this study. I then describe the data collection methods used, and how participants were chosen. Finally, I describe how the data was analysed and interpreted.

### **4.2 Research design**

From the theoretical framework chapter, I made the case for why an understanding of literacy is complex because it is not a linear process, is shaped by behaviour of the student and occurs in multiple contexts. I also made the argument that students with VI require multiple digital literacies. These literacies also depend on the context where it is happening and I further asked the question if opportunities to acquire the eight elements of digital literacies as proposed by Belshaw (2014) is accessible to students with VI.

From the literature review chapter, I highlighted additional skills students with VI need not just at school but also in higher education called the expanded core curriculum. In there I indicated how these skills are picked up incidentally by non-disabled students but have to be deliberately taught to students with VI. These additional skills add to the complexity of studying at university because they can't be picked up naturally without vision and as such these skills depend upon who teaches and what resources are made available to support learning.

Finally, higher education is mostly visual making participation of students with VI highly dependent on support from the university by providing an accessible curriculum and ICTs.

The above needs reveal some of the complexities of students with VI studying at university. It also shows that at each point there would be various ways of viewing and understanding equitable access to the curriculum by the different actors involved whether it be students with VI, academics or non-academic staff that deal with support services such as ICTs.

Therefore, I needed a methodology that would help capture the different ways of understanding equitable access to the curriculum for students with VI given the complexities just mentioned.

Q methodology is a research technique well suited to understanding different ways of thinking around a particular research problem. Q methodology brings qualitative design into the quantitative realm and therefore employs both research designs to understand participant perspectives on a research topic (McKeown & Thomas, 2013).

Watts and Stenner (2012) noted that we are all implicated in meaning making, that is in how knowledge and facts are produced that shape the society where we live in two ways. The first is personal meaning making whereby people make meaning, knowledge and understanding of the world by an individual's deliberate selection of what they value which is called constructivism (Watts & Stenner, 2012). Secondly, through a shared collection of these individual meanings, knowledge or social facts accepted by a group or groups of people called constructionism (Watts & Stenner, 2012). Q methodology is a social constructionist research tool although it can also be applied as a constructivist tool (Watts & Stenner, 2012). It allows the exploration of predominant viewpoints in a particular context (Watts & Stenner, 2012).

Hence, in the attempt to understand the different ways equitable access to the curriculum can be understood, I wanted a methodology that helps understand how the different ways people think about equitable access to the curriculum for students with VI shape into societal facts (constructionist) that shape the academic context students with VI meet at university. This makes Q methodology a social constructionist research method that helps understand patterns of meaning in very subtle ways (Watts & Stenner, 2012). It combines qualitative and quantitative methods to understand the subjectivity (viewpoints) of participants. Participant viewpoints are grouped quantitatively using Q methodology and their meaning is qualitatively analysed using inductive thematic analysis to understand the nature of such views. This study therefore employed the use of both qualitative and quantitative methods to reveal perspectives of participants on equitable access to the curriculum for students with VI.

### 4.3 Methodology

Q methodology (Q) was introduced by William Stephenson in a letter to Nature in 1935 as a way to measure subjectivity (Watts & Stenner, 2012; Ramlo & Berit, 2013; Ramlo, 2005). It was a methodology that sought to focus on first-person viewpoints of its participants (Watts & Stenner, 2012).

In the effort to ascertain barriers, enablers, differences in learning of students with VI; what role technology plays in teaching and learning at university for students with VI; and the impact of support services, I needed participants who would present various viewpoints. This necessitated involving staff and students with VI and in the case of staff members not just academic staff but also non-academic staff responsible for various support services at the university.

In the literature review, I introduced discourses around equitable access to the curriculum. Equitable access to the university and, as by further extension to the curriculum, has to do with a university's commitment to making its educational offerings accessible in their entirety to a diversity of students which usually implies marginalised groups (Essack, 2012). Botha (2007) noted that education consist of three components which are the lecturer, the student and the learning environment. In each of these areas, an understanding of what it means to fully include students with VI into the curriculum differs. From the literature review chapter, attitudes of lecturers determined how students with VI are included (Bakri, 2019). Consideration for the learning means a student with VI comes with or lack of consideration determines how they are included (Bakri, 2019). Understanding of access to opportunities to acquire digital literacies determines the consideration given to make this access available to students with VI (Belshaw, 2014). Therefore, this study seeks to find the different perspectives among those three components spoken of earlier requires a methodology that can capture these perspectives.

Seeing which viewpoints are shared by people is crucial because it provides an understanding of the nature of the different ways equitable access to the curriculum for students with VI is thought of (Watts & Stenner, 2012). The ways in which students with VI and staff groups think

of equitable access to the curriculum may provide a better understanding of the barriers, complexity or strategies that can be recommended to enhance the participation of students with VI in the curriculum. It can also inform better support for staff to make the curriculum more accessible. This was the reason behind the choice of Q methodology for this research.

I will now briefly introduce the history of Q methodology and what informed its creation and use.

#### **4.4 Brief history of Q methodology**

Q methodology was introduced by William Stephenson as a way to measure subjectivity (Watts & Stenner, 2012; Ramlo & Berit, 2013; Ramlo, 2005). It is a methodology that sought to focus on first-person viewpoints of its participants as opposed to R methodology (Watts & Stenner, 2012). In R methodological studies, people were used as the population and tests, traits and abilities as the variables of measurement (Watts & Stenner, 2012). The problem with this as Stephenson pointed out was that using tests, traits and abilities as variables of measurement only took bits of people which could then not holistically facilitate a thorough comparison of their individual differences or similarities (Watts & Stenner, 2012). Therefore, he proposed Q methodology which inverts R methodology to use people as the variable of measurement and traits, abilities and tests, in the form of the Q set (see figure 1 below), as the population (Watts & Stenner, 2012).

*Figure 1: Sample Q set.*

##### **Q Set**

1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement
2. Curriculum design at university lacks implementation of the UNCRPD.
3. The Right to education depends upon the accessibility of information and communication technologies for students with visual impairment.
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.
5. Time required for agreement on appropriate reasonable accommodation for students with visual impairment is factored into all planning.

This means that R methodology looks at relationships between groups of variables (such as abilities) and the score of these variables indicates individual differences in a certain population while Q methodology reveals understanding of a participant within a group of people (Hollingsworth, 2013; Brown, 1993; McKenzie, 2009).

Q methodology is a methodology in its own right that uses a hybrid of qualitative and quantitative research methods to explore feelings, opinions, likes, and dislikes of participants that influence behaviour but may not have been explored (Van Exel & De Graaf, 2005). The hybrid of qualitative and quantitative methods has, however, recently made some to refer to Q methodology as mixed methods (Nicholas, 2011).

Although mixed methods is estimated to have emerged from 1988 after Stephenson developed Q methodology, Q's hybridity of both qualitative and quantitative methods was distinct from mixed methods because Q methodology is qualitative in both its use and theory even though it uses quantitative factor analysis (Ramlo, 2016). As such Stenner and Stainton-Rogers (2004) suggested the term 'qualiquantology' because of the importance of considering the methodology, philosophy, epistemology and ontology of Q.

Therefore, as a methodology which uses both qualitative and quantitative methods, it identifies perspectives not just individual opinions. These perspectives are shared ways among a group of people of looking at the topic that differ from other shared ways of doing so. It does this by using subjective data to objectively group people around a research topic (Ramlo, 2016). "*Subjectivity is the sum of behavioural activity that constitutes a person's current point of view*" (Watts & Stenner, 2012:23). Subjectivity is best understood as Stephenson noted when it impacts on the immediate environment (Watts & Stenner, 2012).

This immediate environment in Q methodology consists of the statements around the research topic and the impact on them happens when people sort these statements using their own opinions and attitudes around the research topic. To do this, Q methodology requires the fulfilment of a number of steps which I am going to discuss next. I will then describe how this study applied the methodology.

## **4.5 Steps to carry out a successful Q methodological study**

To carry out a successful Q methodological study, the research should go through the following steps:

1. Generating the concourse statements
2. Choosing the Q-set out of the concourse
3. Selection of the participants (P set)
4. The Q sorting process
5. Analysing the data
6. Post sorting information
7. Factor interpretation

(Watts & Stenner, 2012; McKenzie, 2009).

Each of these processes will now be discussed below:

### **4.5.1 Generating a concourse of statements**

The process begins with generating a concourse which is all possible statements around the topic of interest from sources such as people's opinions, media reports, journal articles or books that are representative of the breadth of responses that participants can make around the research topic. It is bounded in time and place which means all that can be said around a research topic depends on the time period when one is looking at the research topic and the location where one looks (Watts & Stenner, 2012). These statements may come from participant written or oral communications such as interviews, focus groups, surveys or even photographs or objects (Ramlo, 2005; Gladhart, 2010; Ramlo & Berit 2013; Watts & Stenner, 2012). This is based on the idea that for every concept, wish or object in nature, when considered subjectively, there is a range of shared knowledge formed over time, through various interactions around this concept, wish or object (Watts & Stenner, 2012). It is everything that has been said about it, which gives it meaning and, as such, constructs our understanding. A concourse represents the same thing that a population of participants represents for a qualitative or quantitative study. In a qualitative or quantitative study, the sample of participants represents the population under study while for a Q study, the statements from the concourse represent the items under study. Therefore, the statements

represent the population under study while the participants represent the variables. For this study, initial statements were generated from the literature review and the conceptual framework (Ramlo, 2016; Watts & Steiner, 2005; Van Exel & De Graaf, 2005). The literature review reveals discourses around the research topic at different times, locations and by different actors while the conceptual framework brings theories, frameworks and concepts related to the research topic.

#### **4.5.2 Choosing the Q set from the concourse**

The concourse as discussed above contains all that can be said about the research topic but within a context which means all that can be said in a certain place and time (McKenzie, 2009). This study looked at how staff and students understand equitable access to the curriculum. Therefore, the concourse consisted of all that can be said around the curriculum at university and all those who have interesting things to say about all aspects of the curriculum. The conceptual areas from the theoretical framework and the literature review formed the scope of areas researched. This generated a considerable number of statements and, as such, a representative sample needed to be extracted and this is called the Q set.

The Q set is a subset from the concourse and should equally be representative of the broad discourses around the research topic. To derive the Q set from the concourse, a structured design which involves breaking down the research question into a series of themes or issues that adequately represents the research focus can be done (Watts & Stenner, 2005). Statements should reflect the research question and also should be balanced and not make the participants feel restricted (Watts & Stenner, 2005). This reduction occurs in order to arrive at a sample size that is manageable for the participants to work with but which is still representative of all that can be said about the research topic. Each statement needs to represent a unique view that, together with the others, forms all that could possibly be said about the research topic. Watts and Stenner (2012) suggest that a Q set between 40 to 60 statements is generally used. The Q set can then be piloted to get feedback from initial participants in terms of its clarity, relevance and understanding. Where a statement is not clear, participants can advise or even suggest new statements.



#### **4.5.3 Selection of the participant (P Set)**

Earlier, I spoke of the need for both the concourse and sample Q set of statements to be a representative of the broad range of discourses that can be expressed on the research topic. The broad range of discourses that can be expressed around the research topic requires a careful consideration of the choice of participants. The research topic is on how do staff and students at UCT understand equitable access to the curriculum for students with VI. Therefore, a careful selection of participants who were knowledgeable, had relevant viewpoints on the topic, whether for or against or even neutral and who were fairly representative of UCT was required. Due to this, the participants or P set are not randomly selected but purposefully selected to equally reflect the range of diversity of people who could give adequate feedback on the research topic (McKenzie, 2009). They are people who “represent different stances on a topic of interest” (Fontein-Kuipers, 2016:1).

Remembering that the participants are not the population under study, but are the variable, Q methodology sample size is the number of statements on the research topic (Ramlo and Berit, 2013). The objective of Q methodology is to reveal the existence of viewpoints and explain them, not to generalise to a population, and therefore a representative P set that is knowledgeable on all that can be said around the research topic is what is required with less concern about the number of participants. This is more evident because there are Q studies that have been completed with just one participant and even the inventor of Q methodology, Stephenson, has completed studies with just one participant (Ramlo & Berit, 2013). This is because the focus is on the participants’ impression of the number of statements they are given and less about the number of participants the study has. Therefore, for this study participants were those who had defined viewpoints to express, who felt strongly about the research question and also felt potentially different about it, who lived in the day-to-day experience of the curriculum, either as recipients of the curriculum or designers of it or who supported it through educational services.

#### **4.5.4 The Q sorting process**

With the sample Q set containing statements usually between 40 to 60 in number, participants are now ready to present their views (Ramlo & Berit, 2013). Each statement is

written on a card. Participants then sort out the statements (Q sorting) through placing each statement on a single face-valid dimension such as most agree, neutral/indifferent to most disagree or most important, neutral/indifferent to most unimportant (Watts & Stenner, 2005). The sorting distribution normally runs from a negative value from the left where the most disagree is found to zero towards the middle where the more neutral statements go to positive values towards the right where the most agree statements are placed.

The response pattern at the end usually takes the form of a forced quasi normal distribution curve (McKenzie, 2009) The quasi-normal distribution helps participants to carefully think about the data as well as presenting the data in a form that can be statistically analysed (McKenzie, 2009). In this way, if a participant rates two statements similarly, the forced distribution compels them to choose one out of the two which they either agree with more or disagree with more or vice versa. During Q sorting, the participant's mind is in operation, thinking, evaluating, and interpreting in relation to the array of stimuli brought to his/her focus of attention in the form of the statements on the Q set (Brown, 1980). The researcher's influence is reduced because, even though the researcher supplied the statements that a participant uses, it is ultimately the participant who determines the ordering at the end. Participant application of their personal likes and dislikes or feelings ensures that the statements or items in the finished Q sort are all made to stand in relation to the current viewpoint of the participant emphasising self-reference (Watts & Stenner, 2012). As such, the self of a participant is always and intimately involved in the placement of the statements through their own opinions (Brown, 1980).

Q sorting can also happen via post or online although Watts and Stenner (2021) recommend physical Q sorting, but the quality of the Q sorts would not be diminished with online or postal methods. It just means clearer instructions would need to be given to participants so that they are able to carry it out on their own. There are benefits to online Q sorting such as cost savings and convenience, as long as this does not impact on the quality of the Q sorting because successful Q sorts have happened via post and online (Watts & Stenner, 2012). If done online, which was a method used in this study due to the COVID-19 pandemic which prevented physical Q sorting, there are good online software packages that can help. Watts and Stenner (2012) recommended Flash Q and Q Assessor software, but a substantial number

of other alternatives have since been developed since 2012 when Watts and Stenner (2012) was published. This will be shared in the study Q sorting process section.

#### **4.5.5 Analysing the data**

The Q sorts from participants are loaded into a statistical software package such as IBM's statistical software SPSS or PQMethod software which Watts and Stenner (2005) noted has been specifically developed for Q method factor analysis.

Analysis starts with the calculation of the correlation matrix of the Q sorts (Van Exel & De Graaf, 2005). The correlation matrix reveals the level of agreement/disagreement for each statement in the individual Q sorts, which is the similarity/dissimilarity in viewpoints between the individual Q sorters (Van Exel & De Graaf, 2005).

Then the correlation matrix is subject to factor analysis which helps to identify the number of natural groupings of Q sorts as either similar or dissimilar to one another based on a statistical determination of significant difference (Van Exel & De Graaf, 2005). Factor analysis shows distributions of patterns of agreement and disagreement that correlate with each other to a statistically significant degree (Watts & Stenner, 2012). Therefore, with factor analysis, people with similar views on the research topic will load on to the same factor (Van Exel & De Graaf, 2005).

Next, the factors are rotated to arrive at a final set of factors (Van Exel & De Graaf, 2005). This rotation happens in order to look at the research topic from different angles and as such rotating the factors positions of each factor so that it closely approximates the viewpoint of a particular group of Q sorts (Watts & Stenner, 2012). Therefore, factor rotation aims to position the factors at points where they offer the best possible, or most meaningful, vantage point from which to view the focus of the research (Watts & Stenner, 2012). Van Exel and De Graff (2005) note that the rotation does not affect the relationships between Q sorts but merely shifts the perspective from which they are observed.

The final factors that emerge represent an aggregation of a group of individual viewpoints that are similar to each other and sufficiently distinct from other viewpoints that load onto other factors to a statistically significant degree (Van Exel & De Graaf, 2005; Watts & Stenner, 2012).

These factors are then ready for interpretation by the researcher. This is where the qualitative aspect of the research happens.

#### **4.5.6 Factor Interpretation**

Watts and Stenner (2012) indicate that there is not one single method of factor interpretation. However, it is good to carry out an interpretation process that is true to Stephenson's pursuit of holism. Therefore, Watts and Stenner's (2012) and Brown's (1980) recommendation is to start with the creation of a factor array which is a representation of the factor viewpoints from the aggregation of closely related Q sorts (McKenzie, 2009). The factor array takes the form of an individual Q sort and is an aggregation of similar sorted Q sorts (McKenzie, 2009). This array forms the basis for factor interpretation and it also conforms to the format in which the original data was captured (Watts & Stenner, 2012). The extreme poles (strongly agree and strongly disagree) starts off the interpretation process for statements that are significant and then working towards the neutral statements (McKenzie, 2009).

To deliver on a holistic factor interpretation, a crib sheet is generated for each factor. A crib sheet is an effective means of ensuring that nothing obvious gets missed or overlooked during interpretation by providing a system or organisation that forces the researcher to engage with every statement within the factors (Watts & Stenner, 2012).

A first pass of interpretation is done over the factors using the logic of abduction. Abduction is when each statement from a particular factor is considered as to why that statement is ranked where it is, what it means and what it is trying to tell the researcher. From this, categories are formed and statements that don't fit within the categories are left to be relooked later (Watts & Stenner, 2012). This results in a preliminary hunch or hypothesis for

that factor which hints at the likely viewpoint of that factor and, as the interpretation continues, this viewpoint may be sustained, disproved or changed (Watts & Stenner, 2012).

Keeping these hunches and sense of the viewpoint of the factor, the researcher zooms out to consider the place and significance of each statement to the viewpoint of the factor (Watts & Stenner, 2012). As this happens with the factors, an overall viewpoint begins to emerge which tells the story of the participants.

Using the crib sheet, a second pass through each factor is done in order to identify any additional highly ranked or potentially useful statements that help to clarify or qualify the overall viewpoint and as such these are added to the categories of the crib sheet (Watts & Stenner, 2012). At this second pass, demographic information which on write up is made anonymous such as age, gender, occupation of participants is considered if it helps add further clarity to interpret the signs and clues contained in each factor (Watts & Stenner, 2012).

Using inductive thematic analysis, which is an analytic method to identify, analyse and report patterns within data, each factor is given a name, similar to naming a theme (Braun & Clarke, 2006). This name captures the essence of the viewpoint of the factor (Watts & Stenner, 2012). The relevant statements are then ordered and linked together to create a single, seamless account of the factor's viewpoint (Watts & Stenner, 2012). The theoretical framework detailing digital literacies, UDL, UNCRPD and the hidden and enacted curriculum were used to guide the understanding of the factor viewpoints and as such the generation of the essence of each factor.

At the end, the holistic nature of the viewpoints of participants emerges and as such their perspective on equitable access to the curriculum for students with VI.

#### **4.5.7 Surveys and focus group discussions**

Apart from the theoretical framework aiding the interpretation of the factors, post sort information also helps with this. It helps to clarify the emergent factors to also aid

interpretation. This can take the form of either open-ended surveys, interviews or focus group discussions (Ramlo, 2016). Nicholas (2009) also notes that post sort information can aid in the publication of future studies; therefore, it is indeed a worthwhile exercise to carry out.

The researcher can also share the first level interpretation of the factors and as such get additional information from participants if this initial interpretation aligns with the sense of how they sorted the Q sorts but also to share any additional information that aids clarity to the initial interpretation (Nicholas, 2011; Ramlo & Newman, 2011; Valenta & Wigger, 1997). I will now move to describe how the Q methodology steps above were applied to this study.

#### **4.6 How the study was carried out using Q methodology**

In finding all that could be said about equitable access to the curriculum, a structured design which involves breaking down the research question into a series of themes and issues which adequately represented the research topic was done.

##### **4.6.1 Generating the concourse statements**

In generating the concourse, the research question: “How do students and staff at the University of Cape Town understand equitable access to the curriculum for students with VI?” and the theoretical framework covering the scope of digital literacies; the hidden, enacted curriculum; UDL; and the UNCRPD were used to generate four sub categories, namely: “right to education and the UNCRPD in relation to student with VI”, “universal design for learning”, “digital literacies” and “hidden and enacted curriculum”. These formed the framework for developing the concourse. The dimensions of each of these four categories were then developed in consultation with my supervisors. In addition, my experience and expertise as a lecturer, online course developer, programme convener and digital accessibility expert brought some familiarity with the development of the concourse. The categories and their dimensions are shown in Table 1 below:

Table 1: Concourse categories and dimensions

Relevant categories	Possible dimensions of the categories
1. Right to education and the UNCRPD in relation to student with VI	<ul style="list-style-type: none"> <li>• Educational goals of UNCRPD for student with VI (students with VI)</li> <li>• Implementation of UNCRPD at UCT for students with VI</li> <li>• Understanding of right to education for students with VI</li> <li>• Learning style and reasonable accommodation for students with VI at UCT</li> <li>• Medical and social model view of students with VI</li> </ul>
2. Universal design for learning	<ul style="list-style-type: none"> <li>• Accessible pedagogy</li> <li>• Acceptable level of adaptation for curriculum for students with VI</li> <li>• Multiple means of representation, engagement, action and expression</li> <li>• Support services for students with VI at UCT</li> <li>• Access to student clubs and societies</li> </ul>
3. Digital literacies	<ul style="list-style-type: none"> <li>• Eight elements of digital literacies</li> <li>• Access, opportunities and barriers to acquire and develop digital literacies students with VI</li> <li>• Types of digital environments</li> <li>• Context of digital literacies at UCT</li> <li>• Online systems, assistive devices, social media, emails and internet</li> </ul>
4. Hidden and enacted curriculum	<ul style="list-style-type: none"> <li>• Access to curriculum content for students with VI Day-to-day experience of the curriculum</li> <li>• Impact of the unconscious aspect of the curriculum</li> <li>• Curriculum design, teaching and assessment</li> <li>• Inclusive curriculum</li> </ul>

	<ul style="list-style-type: none"> <li>• Online curriculum</li> <li>• Successful acquisition of knowledge needed for courses</li> <li>• Do students with VI gain satisfactory marks?</li> </ul>
--	---

Table 1 above informed the search for all that could be said about the research topic. Using these categories and dimensions, a search strategy was formulated and also the sources used for the search. Both are indicated below:

Search strategy:

1. Search sources are journal articles, organisational websites, conference presentations and reference lists.
2. Using the categories above, search for conversational comments on social media identified in the sources above.
3. For journal articles, look at abstracts that are relevant to the categories and exclude abstracts that are not relevant.
4. For organisational websites and conference presentations exclude those not relevant to the four categories in Table 1
5. Only sources in English are considered because of time constraint of research and cost of translation.
6. Exclude sources more than ten years old to get more recent and relevant information.
7. Stop search when new searches no longer yield new information.

The sources used for the search are listed below:

1. Right to Education:
  - a. UCT Disability Policy
  - b. UNCRPD hashtags on Twitter
  - c. Orientation and mobility Pinterest social media posts
  - d. Social model hashtags on Twitter and Facebook social medias
  - e. Medical model hashtags on Twitter and Facebook social medias



2. UDL:
  - a. Search CAST (Centre for Applied Special Technologies) website who deal in UDL design and application in education
  - b. Search WebAim (Web Accessibility in Mind) website for online website accessibility
  - c. Search AEM (Accessible educational materials) website who deal with accessible materials and technologies for the widest range of individual variability, regardless of format or features
  - d. Microsoft accessibility website who deals with office 365 (Microsoft Word, PowerPoint, Excel, Outlook email) that students use in education
  - e. Apple accessibility website that deals with hardware and software accessibility in education
  - f. Pinterest social media on making online teaching materials accessible for students with VI
3. Digital literacies
  - a. Hellen Keller low vision services Facebook social media comments
  - b. Sensory solutions Facebook social media comments
  - c. Edit Microsystems Facebook social media comments and Twitter comments
  - d. Blackboard Ally learning management systems Twitter and Facebook social media comments
  - e. Zoom text, Jaws and Voiceover Twitter and Facebook social media comments
  - f. Pioneer printers Facebook social media comments
  - g. Dough Belshaw interview on digital literacy
  - h. Dough Belshaw's YouTube TED talk and blog looking at comments by viewers on digital literacies
4. Hidden and enacted curriculum
  - a. Hidden and enacted curriculum discussions on [www.quora.com](http://www.quora.com) questions and answers form

At the end of the search process, 131 statements informed the concourse. The next step from this was to generate the Q set that provided good coverage from the concourse (Watts & Stenner, 2012).

#### **4.6.2 Choosing the Q-set out of the concourse**

As noted in section 4.5.2 in the steps to carry out a successful Q methodology study above, the Q set is a subset from the concourse. There are many ways to generate the Q set and no

one way is the correct way to do this, as long as it is tailored to the demands of the research question without losing its comprehensiveness (Watts & Stenner, 2012; Nicholas, 2011; Brown, 1980). However, for this study, I chose to use a structured Q set to choose the representative statements for the Q set. This involved picking representative statements and working with my supervisors, making sure each statement covered aspects of the category and dimensions identified from the discourse to maintain the coverage and representation of the discourse (Watts & Stenner, 2012). A sample of this Table can be seen in appendix 1: sample Q set Table. At the end, 131 statements from the discourse were reduced to 60 statements which were not only representative of the discourse but also fell within a manageable number for participants to work with. This was done through theoretically considering each statement with feedback from my supervisors, feedback from the pilot study and my experience as a lecturer, online course designer and digital accessibility expert.

#### **4.6.3 Selection of the participants (P set)**

The site for this research was the University of Cape Town (UCT) and, as such, given the exploration was for an understanding of equitable access to the curriculum for students with VI, staff and students who were involved in the different aspects of the curriculum were selected. UCT was selected from other South African universities as a site for this study due to my familiarity with its curriculum and support systems as a student and as a staff member. UCT started engaging with disability inclusion from a point of access to ensure students with disability get access to university. This has since progressed to consideration of accessible services such as transport, accommodation, building access, sports and societies access. The institution is now going further to try address access to the curriculum and ICTs through the collaboration of its Centre for Innovation in Learning and Teaching and the Division of Disability Studies on redesigning blended online courses using universal design for learning. It was helpful to look at UCT to understand what progress has been made.

Having worked at UCT for more than a decade as a lecturer, course developer, convenor and as a digital accessibility expert I also brought some expertise and familiarity with regards to the research topic. The aim was therefore to choose participants who were diverse but also involved with curriculum as designers of the curriculum, support services for the curriculum, those that deliver it and those that consume the curriculum at UCT.

#### 4.6.4 Participants' inclusion criteria

Participant were purposefully sampled because of their familiarity with the research topic. Watts and Stenner (2005) indicated that 40 – 60 participants or even fewer are usually enough given that Q methodology is not concerned about the number of participants that have defined viewpoints about the research topic but rather the nature of participant viewpoints. Additional participant beyond 60 usually yield little to no new information and they tend to agree with established viewpoints (Watts & Stenner, 2005).

The sample of participants consisted of:

1. **Students with VI:** They experience the curriculum and as such can give first-hand accounts of their experience of it. These were both undergraduate and postgraduate students who had registered with UCT Disability Services as having a VI. These were students registered with any programme or degree at UCT. I was able to recruit nine of the ten participants originally planned.
2. **UCT Disability Services Department:** Staff who deal with reasonable accommodation of students with disabilities and particularly students with VI. Five staff members work with students with VI such as the Disability Advocacy specialist, the manager of Disability Services, the Direct Services specialist, the Barrier-free Access specialist, and the administrative Assistant. All five were recruited and participated.
3. **Staff at the Centre for Higher Education Development (CHED):** The teaching and learning design team at CHED were recruited because they deal with the design of the curriculum. Staff must have had some experience in the design or demonstration of curriculum design to other academics. I recruited five staff members out of the five originally planned.
4. **Staff at UCT Library Services:** A core part of the university that provides access to a wide range of scholarly literature that students use. They were staff members who deal with either the physical or electronic library databases or both. I planned to recruit up to five staff members but ended up getting eight participants who were interested and as such participated.

5. **Lecturers who teach students with VI:** Those who have taught at least one student with VI. I recruited five out of the five planned.
6. **Staff at UCT Technology Department:** UCT'S Information and Communication Technology Services (ICTS) department provides the online support necessary for the growing transition and incorporation of online services that help shape the digital environments students use at university. I recruited five out of the five planned.

In total, I planned to recruit 35 participants but ended up with 37 participants. All 37 took part in the study.

#### **4.6.5 Exclusion criteria**

1. Visual impaired students not registered with UCT Disability Services.
2. Staff members who had not worked with students with VI at UCT Disability Services.
3. Staff members at CHED who had no experience in the design of the curriculum.
4. Staff members who don't deal with managing the physical or electronic library databases.
5. Lecturers who have not taught students with VI.
6. Staff members who don't actively manage any of the online platforms students use such as learning management systems, library systems, admission systems, student email systems, software, hardware, and internet connection.

#### **4.6.6 Recruitment of participants**

Students with VI were recruited by sending an email to the UCT Disability Services who then sent an email to their list of students with VI who would be interested to participate in the study.

Participants consisting of staff members from UCT library services, CHED, Disability Services, lecturers and ICTS were recruited by sending an email to their departments, notifying them of the criteria for a participant to be eligible for the study and if they would be interested to participate.

Those participants who indicated willingness to participate were then emailed the information sheet and informed consent form located in the appendix section (appendix 14 and 15). During data collection, participants were asked if they understood the information sheet and consent form and if they had any questions. Those participants who completed the data gathering online completed the informed consent online, while those who engaged via Zoom online, which I will speak more about in the Q sorting process section, either emailed their consent or gave verbal consent. These were mostly students with VI. The next section will cover the Q sorting process.

#### **4.6.7 The Q sorting process - data collection**

Data gathering happened during the COVID-19 pandemic restrictions. This made it difficult to meet in person and, as such, the Q sorting process strictly happened online. With feedback from my supervisors, I had to research what online provisions existed to conduct the Q sorting process. As stated earlier in section 4.5.4, regarding steps to conduct a successful Q study, Watts and Stenner (2021) indicated that Q sorting could be carried out by post or even online recommending some online software that could be explored such as Q Assessor and Flash Q.

Flash Q was explored but the only downside, as Watts and Stenner (2021) also noted, was that you could not analyse the data within the software and transfer to other data analysis software would require manual entry. Q assessor was also explored. It had the advantage of data capturing and analysis. However, each software was not deemed user friendly enough for participants to be able to carry out Q sorting and, as such, I explored other alternatives with feedback from my supervisors.

The research needed an online Q methodology capturing and analysing software that was at the same time user friendly to participants who would engage with this online.

The Q methodology software “Q Methods Software” website available at: <https://qmethodsoftware.com/> proved to meet the requirements as a Q methods data

capturing online tool, analysis tool and also one not too complicated for participants to understand online. This tool was then decided as the data capturing and analysis tool to use after review with my supervisors.

#### *4.6.7.1 Pilot*

A pilot study was first carried out with four participants to get feedback about the statements, how easy it was to use the Q Methods online website and any other general feedback. Participants gave feedback to one or two statements which needed more clarity such as using the full name of the United Nations Convention on the Rights of Persons with Disabilities as not everyone would know what UNCRPD means. Another feedback was that Q Methods website was difficult to use on a mobile phone, and therefore participants were advised to carry out the Q sorting data gathering process on a computer. The next feedback from the pilot was one participant's frustration that they agreed with a lot more statements than disagreed and as such had to place a few statements they agreed with in the negative distribution; however, I explained to the participant that it was not an issue. I explained that the sorting process is a relative process where they rank based on what is valued more and what is valued less. I indicated that those few items placed in the negative part of the distribution meant she slightly valued them less than those placed in the right part of the distribution (Watts & Stenner, 2021). With this, the participant was fine.

Two other participants with VI took part in the pilot and the feedback they gave was that they would have preferred to have it in a physical space but due to COVID-19 they could understand why we could not physically meet. They also indicated that repeating the statement and also the location where they were placed was of great benefit to them as they could conceptualise the distribution. They also indicated that the patience of the researcher made them comfortable to ask as much as they wanted to repeat a statement, change it whenever they wanted and reading a whole column or sets of columns to make sure the statement was where they wanted it to be placed. They also noted that it would be good for the Q methods software developers to think around accessibility of their website for visual impaired participants because as it currently is, they cannot engage with it at all.

#### *4.6.7.2 Online Q sorting for staff members*

Staff members who agreed to participate in the study were sent detailed instructions with a video tutorial on how to complete the Q sort online on the Q Methods website. This instruction can be found in the appendix section (appendix 17). They were also informed to contact the researcher if they experienced any challenges. Only one staff member could not complete the Q sorting online while two other staff members reached out for clarification on some aspect of the process. Data for the staff member who could not complete the Q sorting had to be discarded because it was not adequately completed.

#### *4.6.7.3 Online Q sorting for students with VI*

The researcher explored if there existed Q methodological studies involving students with VI in order to work from a baseline but could not identify any such studies. Therefore, this study appears to be the first to involve participants with VI online or face-to-face, and given that Q sorting is largely a visual activity, ways to accommodate participants were employed as best as possible, especially with feedback from my supervisors. One of my supervisors was particularly experienced in how to accommodate participants with VI. The Q sorting happened with students with VI one at a time and it took around four hours each to complete. For students who had low vision, it was less than four hours due to use of the limited vision they had but for students who were totally blind, it took over four hours each. Students with VI noted that they were not bothered with the length of time as being accommodated was worth the longer time spent during data collection. Before the Q sorting started, a brief instruction was read out to participants which is included in the appendix (appendix 17). This instruction got input from my supervisors as well. The process proceeded as follows:

1. Zoom online web conferencing communication tool was used for the Q sorting process.
2. I obtained consent from the participants to record the sorting process.
3. I had a physical distribution grid in front of my computer and subsequent statements on paper in front of me. A sample of this is in appendix 24.
4. I first read all the statements to the students with VI.

5. I then read the statements a second time, asking the participant to indicate out of the three categories of disagree, neutral and agree, where each statement should go.
6. At each point, participants were informed that they could ask questions on any statement or process they didn't understand.
7. After sorting into the three piles, I took the disagree pile and read each statement to the participant and as such the participant indicated to which grid such statement belonged.
8. I did the same for the agree and neutral statements.
9. After the sorting, I read the full statements to the participants and their position in the grid and from here the participants further fine-tuned their sorting. This often required reading statements in the whole column or sometimes statements in previous or next columns for participant to decide where they felt comfortable placing the current statement. Given they could not see these statements and as such needed to get a sense of where they were, this required a lot of repetition. It took patience, understanding but mostly gratitude from the researcher that the participants were patient enough to go through the process. Often, if for instance a participant was uncomfortable with a statement for example in the +2 grid which the participant felt agreement stronger than +2, that meant reading all statements in columns +6 down to +2 to get where this statement needed to be placed and whatever statement was displaced also meant reading the columns again. This was very beneficial for participants because the more the statements were repeated, the more familiar they became for them.
10. After this, I then asked the survey questions and how accessible the process was for students with VI. The survey questions are listed further below.
11. Most indicated that it was accessible but did say they would have preferred it being in a physical space, just as was mentioned in the pilot. However, they said due to the patience of the researcher in reading the questions over and over again, they felt comfortable engaging to the end, similar to response in the pilot phase.
12. I however noted the incredible memory which students with VI displayed because as some participants tried to decide where a statement should be placed, some had remarkable conceptual memory of the location of other statements and even at a point a participant indicated that they remembered a certain slot had a certain



statement and, as such, needed to swap that statement. This may indicate statements which made a deep impression on the participant and as such their location was mentally registered and could be recalled.

After the Q sorting process ended and the participant disconnected from Zoom, I then took a picture of the sorting pattern and then manually entered this into the Q Methods online website. An example of this picture is in appendix 24.

Survey questions after Q sorting:

1. Why did you place the two statements in the most agree slots (+6 column)?
2. Why did you place the two statements in the most disagree slots (-6 column)?
3. After this exercise, how do you understand the rights of students with VI to have equitable access to higher education?
4. Additional question for students with VI: Did you find this process accessible? Any areas for improvement?

The next step in the process was to analyse the data and in this section I will also explain decisions that were taken before and during analysis and why those decisions were taken.

#### **4.6.8 Analysing the data**

Q methods online software also includes an analysis component. Once Q sorts completed by staff were done and Q sorts for students with VI were captured on the online software, a couple of decisions to guide the analysis were made. In this case, I followed recommendations for analysis from Watts and Stenner (2012) as it was straightforward.

The first decision in the analysis had to do with choosing the correlation matrix. The correlation matrix helps establish the degree of agreement or disagreement between Q sorts

and the Pearson correlation matrix was chosen over Spearman, although there is little difference in both methods as noted by McKeown and Thomas (2013). Pearson was chosen in line with Watts and Stenner (2012). The next decision was the factor extraction method. Factor extraction helps find repeated patterns in data (Q Methods Software, 2022). Two methods are available: Centroid Factor Analysis and Principal Component Analysis. Centroid Factor Analysis was chosen because it allows for data exploration. That means looking at the data from different viewpoints while Principal Component Analysis usually revolves around a single mathematically best solution which you then have to use (Watts & Stenner, 2021).

After extraction, the next choice was what factor rotation method to employ. Factor rotation involves finding the best possible angle to look at the factor that yields the best information (Watts & Stenner, 2012). Two methods were available. Hand rotation and Varimax rotation methods. Watts and Stenner (2012) note that no one method is better but choice of method will depend on the nature of the data and aim of the researcher. Varimax was chosen because, as recommended by Watts and Stenner (2012), research that used an induction method where the data leads the understanding as opposed to some hypothesis was better suited to using the Varimax rotation method.

After factor rotation, the factor loadings for each factor are presented. I note here that the choice of number of factors to retain for analysis before rotation was chosen based on two criteria. The first was that the factor had an Eigenvalue (EV) greater than one and the second was that the factors were statistically significant at 0.05. A factor's EV indicates how well it captures and explains the viewpoint it represents and as such an EV greater than one is usually the cut-off point as recommended by Watts and Stenner (2012). This is because EV less than one usual has weaker explanatory power. A statistical significance at 0.05 indicates that the probability is less than 5% that the viewpoint captured by a factor has occurred by chance.

Three analyses were undertaken: a) for all the participants of the study (AP), b) staff only (SO) and c) Q study for students with VI Only (SVIO). Therefore, two other Q studies were carried out for staff only and Students with VI only. Two factors emerged from the all participants and staff only Q studies each but only one factor emerged from the Students with VI only study as the second factor's EV was less than one. Remembering as stated earlier that EV less

than one captures a weaker explanation of the viewpoint that a factor represents hence the reason to only select SVIO factor with EV equal or greater than one. Both factors that emerged each for AP, SO and the one factor for SVIO each identified a group of participants that rank ordered the statements in a very similar fashion thereby revealing group of participants who have similar perspective, viewpoint or attitude towards the research topic of staff and student understanding of equitable access to the curriculum for students with VI at UCT (Watts & Stenner, 2012). The names given to the factors in Chapter 5 captures this perspective, viewpoint or attitude.

Q Methods online software also flags Q sorts that significantly loaded onto the factors that were chosen based on earlier mentioned criteria.

#### 4.6.9 Factor Interpretation

The analysis started with developing a factor array Table (FAT) for the AP Q study and SO Q studies. None was done for the SVIO Q study due to the emergence of only one factor as stated earlier. An example is shown in Table 2 below and the full factor array Table for AP Q study is available in appendix 2. The full factor array for SO study is available in appendix 7 and for SVIO is available in appendix 12.

Table 2: Factor array Table (FAT) for AP study factor 1 and factor 2 (APF1 and APF2)

Statements	F1	F2
11. The right to education is both a human right and an enabler of other human rights.	+2	+6
18. Students with VI have a right to accessible education equal to those of non-disabled students to engage in the same interactions and enjoy the same services as students without disabilities.	+5	+6
39. Content of a course site cannot be made accessible because it is discipline specific.	-6	-5
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6	-6
51. The curriculum at university is mainly designed for able bodied students.	+6	+1
57. Students with VI don't want to compete to be the best students but just want to pass.	-5	-6
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6	+2

The factor array is an aggregation of closely related Q sorts that comes closest to the viewpoint of that factor (Watts & Stenner, 2012; McKenzie, 2009). It is basically a Q sort that

comes close to expressing the view presented in the factor. Therefore, it forms a good place to start the interpretation. This involved zooming in and out by looking at the meaning of each statement (zoom in) and comparing it to the overall story of the factor (zooming out).

Next is the study analysis Table (SAT) and a sample is shown in Table 3 below. The SAT Table contains Q sorts that significantly load onto a factor of each Q study (AP, SO, SVIO). This was used to then consider statements that added to the narrative, were distinct or contradicted the narrative. The full SAT1 and SAT 2 for AP Q study factor 1 and factor 2 are available in appendix 3 and appendix 5.

Table 3: Study analysis Table (SAT) for AP factor 1 and factor 2 (APF1 and APF2)

Statements	Q sorts that significantly loaded unto factor 1 of AP study													
	F1	OZA0F	SUJA	7TTP9AV	BH8Q	CLVFV	KBRR4	TW9QT1	UA9N61	SI0DFH7	AKZL	YOITEP3	O2XO	WV99
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+2	+6											+6	
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	0		+6											

Finally, a crib sheet Table (CST) was developed. An example is in Table 4 below and the full CST1 and CST2 for AP factor 1 and factor 2 are available in appendix 4 and appendix 6.

Table 4: Crib sheet Table (CST) for all participant study factor 1 (APF1)

<b>Items ranked at +6</b>	
51. The curriculum at university is mainly designed for able bodied students.	
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	
<b>Items ranked higher in factor 1 array than in factor 2 array</b>	
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	0
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4
<b>Items ranked lower in factor 1 array than in factor 2 array</b>	
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	+2
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4
32. University electronic library databases and their resources are generally accessible to students with VI.	-4
<b>Items ranked at -6</b>	
39. Content of a course site cannot be made accessible because it is discipline specific.	
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	

A crib sheet is a systematic approach to really consider every statement that stood out in the factor in terms of whether such statement added something new, contrasted with the existing narrative or even took away from the narrative (Watts & Stenner, 2012). Considering all statements supports the holism of Q methodology (Watts & Stenner, 2021). This was the final layer for interpreting the factors. The crib sheet basically had four categories which were:

1. Statements ranked highest at -6
2. Statements ranked higher in factor 1 than in factor 2

3. Statements ranked lower in factor 1 than in factor 2
4. Statements ranked highest at +6

With the crib sheet, any statement of importance, even those in the middle which are of course also important will be considered and as such this helps maintain the holistic nature of Q methodology. A second pass at the crib sheet to consider any statement left out after applying the above categories but given I had only two factors, all statements were considered so there was no need for a second pass at the crib sheet. I also added statements that were ranked the same for both factor 1 and 2 in the crib sheet.

Using the Tables above, an example of AP Q study interpretation is shown further below by using FAT in Table 2, SAT in Table 3 and CST in Table 4 below. Note that this is just an example and the full Tables can be viewed in the appendices as indicated above.

I also used the following notational conventions when describing the factors (McKenzie, 2009):

1. "S" will stand for statement while plus "+" or minus "-" signs will indicate the level of agreement or disagreement of the statements. FAT, SAT or CST indicates the Table from where the statement was taken. (e.g.: S60: +6 – FAT indicates a rating of plus 6 on statement 60 which is taken from the factor analysis Table (FAT).
2. P1 for instance will stand for participant 1 comment. Therefore, (S6: +6, P1 – SAT[SR]) will indicate statement 6 was ranked +6 with participant 1 comment supporting that statement. The comment came from study analysis Table (SAT). [SR] means the comment was from the survey responses.
3. Where a participant comment does not relate to a specific statement, then I will represent this with e.g.: (Comment, P15 [FGD]) which is comment from participant 15. [FGD] means this was comment from the focus group discussion.

Here is an example, from FAT in Table 2. The narrative begins with: Even though developing content right from the start reduces the typical time, cost and resources needed to make the curriculum accessible (S60: +6 – FAT), not doing this from the start may be why the curriculum is perceived to be mainly designed for able bodied students (S51: +6 – FAT).

Then from SAT in Table 3, the narrative continues: An enabler of inclusive curriculum development is accessible information technology and it is the university's responsibility to develop a policy for this and train both academic and non-academic staff in order to shape university culture (S6: +6 – SAT). However, the current effort to achieve this is led by individual lecturers rather than the institution. *“At the moment, the burden is on the lecturers who are not supported, rewarded or facilitated to do what is right...”* (S6: +6, P1 – SAT). It may also demonstrate that the effort for an accessible curriculum is not necessarily aligned or of the same priority... This is because *“the portfolio that you teach on for promotion does not include a criteria around accessibility...”* (Comment, P15). The lack of support for academics and lack of time to make the curriculum accessible indicates that a lot of the barriers that students with VI face arise from lack of attention to the curriculum, and not from their impairment (S16: +6 – SAT).

Finally, from CST Table the narrative ends: Countering this argument, the view that it should not be the *“responsibility of individual students”* (S16: +6, P4 – SAT1) to make the curriculum accessible is strongly supported. However, there may be instances where the impairment constitutes a barrier (S16: 0 - CST).

This process was carried out for staff only (SO) and for students with VI only (SVIO) Q studies. However, SVIO only had one emergent factor and as a result interpretation was done for that factor alone.

In this way, the hunch and the process of abduction began and the narrative of the factor started to emerge. Abduction means to consider the meaning of each statement in relation to the narrative or story that the factor is suggesting (Watts & Stenner, 2021). Therefore, statements are not considered just for the meaning they convey but in comparison to the overall meaning of the factor. Watts and Stenner (2021) note that abduction is for discovery and the generation of theory but not to test or verify existing theory.

At this stage, I then considered consensus and distinguishing statements produced by Q Methods website and using the logic of abduction, checked if they were important to the overall story. Consensus statements are those that reflect a statistically significant level of

agreement across both factors and distinguishing statements are those that reflect a level of statistically significant difference across factors (McKenzie, 2009). This is included in appendices (25 to 28). These did not significantly add to the interpretation of the study. The last stage was to consider if the demographics captured in this study added to the narrative and also the survey responses captured during Q sorting. The demographic information did not add to the overall narrative but the survey responses did contribute to this. The demographic information is in appendix 20.

Participant comments were also used to further clarify a factor's viewpoint and there were two sources for this which are below:

1. Participant response to the questions:
  - a. "Why did you place the two statements in the most agree slots (+6 column)?"
  - b. "Why did you place the two statements in the in the most disagree slots (-6 column)?"
  - c. "After this exercise, how do you understand the rights of students with VI to have equitable access to higher education?"
2. Participant comments in a follow up focus group discussion where the findings were presented.

#### **4.6.10 Focus group discussion**

After the factor interpretation, I then conducted two focus group discussions where I presented the initial interpretations to participants. The two focus group discussions were for staff members only and students with VI only.

Both focus group discussions happened online over Zoom due to COVID-19 restrictions. Participants were more comfortable meeting online rather than risking physical proximity with others. Focus group discussion was done to triangulate and validate the findings and understand why participants placed the cards where they did. The focus group questions for staff and students with VI are included in appendices 18 and 19. Focus groups with their insight into multiple different participants helps to embellish the findings further with input



that either supports, contradicts or is distinct to the overall viewpoint of the factors. (Litosseliti, 2003).

#### **4.7 Trustworthiness and scientific rigour**

Trustworthiness and rigor of research guarantee that research has been clearly communicated, has meaning in the context of those that receive it, and has integrity in terms of how research data was interpreted (Williams & Morrow, 2009). To demonstrate how trustworthiness and rigour were achieved, I will highlight how this research satisfied qualitative research criteria such as credibility, confirmability, dependability and transferability (Guba & Lincoln, 2001).

##### **4.7.1 Credibility**

Credibility refers to how the researcher accurately interpreted and represented participant views through the data they contributed to the research process (Cope, 2014). That is how the findings reflects the reality under study which is understanding of equitable access to the curriculum for students with VI. Q methodology is self-reference driven and as such is based on the point of view of participants and therefore has no outside criteria for participant viewpoint. This ensures the credibility and validity of the data because the influence of the researcher is greatly minimised (Van Exel & De Graaf, 2005). However, there are other ways to further strengthen the credibility of the findings which I employed, one of which is data triangulation. Data triangulation is where the researcher uses different data collection methods to achieve a comprehensive view of the research topic (Cope, 2014). To achieve this, I used multiple sources such as the Q sorting, survey questions and focus group discussions. I also referred to my field notes, got feedback from my supervisors during the data collection process, conducted a pilot phase and got feedback from Divisional PhD seminars where I presented to colleagues in my division and department. All this assisted to triangulate data.

Another way used to strengthen credibility is through member checking. Member checking is a way to make sure my interpretation of participant data is as they intended (Guba & Lincoln, 2001). This was done by conducting focus group discussions where I presented the findings to participants and they were able to confirm that my interpretation was as they intended it.

The last way used to strengthen credibility was through reflexivity which entails acknowledging the researcher's position to the research process and how that was managed (Cope, 2014). I did this by documenting feelings, views and relationships felt as the research progressed including any reactions to participants. One of my reflections was the resilience of my participants with VI to endure the lengthy Q sorting process of four hours plus which encouraged me to make sure I represented their contribution as they gave it in order to contribute to the international body of knowledge. I also reflected on the intense frustrations felt by staff members, especially the academic staff members, towards lack of accessible institutional teaching and learning practices for students with VI. I could sense hope that the results of this research could move the conversation forward especially since we were in the time of COVID-19. Academic staff tried to remain professional in airing their views but I could sense the almost resignation from them regarding the unlikelihood that changes would happen. My hope is that I have done justice to this and will further do so with publications from the thesis. I further reflected on accessibility of the data collection process for students with VI since we could not physically meet due to COVID-19. It speaks to lack of commitment to evaluate research data collection methods for as many diverse people as possible and I will write about this through publications. Lastly, I reflected on the experience I come with as a course convener, online course developer and digital accessibility expert. I have often felt anxiety at the slow process of designing curriculum to support students with VI which was a motivation to do this research. Meetings with some of my students with VI often left me feeling powerless, more so because disability accommodation benefits everyone, not just students with disabilities. I often reflect why it is that it is not embraced at a faster rate but realise the output of this research study has the potential to change practice in terms of curriculum design with accessibility of students with VI from the start.

#### **4.7.2 Confirmability**

Confirmability ensures that the findings of the research are directly from the data provided by participants (Cope, 2014). To ensure confirmability, I presented my data analysis, findings and interpretation to my supervisors who cross checked to point out any area that was not in line with what the data was saying. Confirmability was further established through the direct quotes from responses to the survey questions and also from the focus group discussions. I

also kept an audit trail of the research process in order to be able to go back and locate the origin of the findings. Lastly, the viewpoints that emerged from the factors were confirmed by participants during the focus group thereby clearly indicating areas that come from the participants and the researcher if any from the researcher (Williams & Morrow, 2009).

#### **4.7.3 Dependability**

Cope (2014) notes that dependability is achieved when the study can be replicated by another researcher in similar conditions. To ensure dependability, I carefully detailed the research design, data collection methods, how the methodology should be applied for a successful study, how I then applied the methodology to this study, how the analysis was done and the interpretation of the data. This established an audit trail that can be replicated.

#### **4.7.4 Transferability**

Transferability means the research study can be applied to other settings or groups of participants (Cope, 2014). This study ensured transferability by detailing the study site in section 1.4, the nature of the participants in sections 4.6.3 and their inclusion and exclusion criteria in sections 4.6.4 and 4.6.5. Participant demographic detail is also available in appendix 20 to indicate those that informed the study. Although Q methodology is not in the business of statistical generalisation, it however does produce conceptual generalisations (Watts & Stenner, 2012). This is because from Q methodology concepts, theories and models of practice are very powerful as Watts and Stenner (2012) note if, for instance, it contradicts established preconceptions, teaching and learning practices. In this way, it can serve for a reconsideration of practice (Watts & Stenner, 2012).

### **4.8 Ethical considerations**

In order to safeguard participants from harm, abuse or negligence, research involving human beings have to declare how ethical protocols were applied (Zina, 2017). For this study, I adhered to the 2013 revised version of the Helsinki Declaration that this research would follow the Ethical Principles for Medical Research Involving Human Subjects (World Medical Association, 2013).

I received ethical approval for this study with reference number 655/2020 (see appendix 21) from the University of Cape Town's Faculty of Health Sciences Human Research Ethics Committees (UCT FHS HREC). I also received ethical clearance for participants who were staff members at UCT from the Executive Director of Human Resources (see appendix 22). In addition, I received ethical clearance for students with VI from the Executive Director of Student Affairs (see appendix 23).

#### **4.8.1 Autonomy and informed consent**

Autonomy means participants get the respect that enables them to make their own decisions while informed consent means, after having received full details of the purpose of the research and their participation, they can accept or decline to participate (Zina, 2017).

I sent the information sheet (see appendix 14), the informed consent form (see appendix 15), ethical clearances (appendices 21 – 23) to both students with VI and staff members and did communicate to both groups to indicate if there were any details about the information that was unclear. Participants were given more than two weeks to reply with any concerns, questions or clarity regarding the research process and their participation. Only one staff member declined after first attempt at Q sorting due to external boards evaluating her department and thereby limiting the time she could spend during data collection. I thanked her for her willingness.

For students with VI, I read the informed consent form during the zoom session for them to verbally accept or not and asked if they were okay to voice/video record the session.

#### **4.9 Confidentiality, non-maleficence, beneficence and justice**

**Confidentiality:** To preserve the confidentiality of participants, the information sheet (see appendix 14) noted that only I the researcher and my supervisors would have access to the data supplied by participants. It also indicated that no identifiable information would be published as pseudonyms would be used to protect participant privacy. During the data collection process, the zoom session invitation details for the Q sorting process (individual

students with VI) and focus group (students with VI and staff) was personally sent to each individual participant to preserve confidentiality.

**Non-maleficence:** The study did not present any harm to the participants and questions of a sensitive nature were avoided. Participants were told in the information sheet that if they felt uncomfortable at any time or felt any risk, they could speak to myself or my supervisors.

**Beneficence:** Participants were told in the information sheet (see appendix 14) that the research would not result in direct benefit but would contribute to finding ways to support students with VI at university better.

**Justice:** Participants were informed that they could ask any question if they wished to, and if at any time they felt unhappy they were welcome to contact the supervisors of the study or the ethics committee. Contact details of my supervisor and co-supervisor were made available in the information sheet as well as contact details for the chair of the ethics committee. A fair process of selection during recruitment for students with VI consisted of making sure they were students registered for any degree or programme and that they were also registered with UCT Disability Services as students with VI.

#### **4.10 Conclusion**

In this methodology chapter, I detailed why I choose Q methodology, what Q methodology is as a research method and how it was applied to my study. I also indicated how the data was analysed and interpreted in preparation for the findings chapter and later the discussion chapter.

## Chapter 5 – Findings

### 5.1 Introduction

In this chapter, I present the interpretation of the factors starting with interpretation for the all participant (AP) Q study, staff only (SO) Q study and the students with VI only (SVIO) Q study. From the methodology chapter I mentioned that the interpretation of the factors started with the factory array Table (FAT) (appendix 2), the study analysis Table (SAT) (appendix 3), and finally the crib sheet Table (CST) (appendix 4).

For each of the Q studies (AP, SO, SVIO), I begin with the factor outline which is a summary of the relevant statistical information followed by a Table that summarizes the factors for the study, the variance accounted for by the factor and the number of Q sorts that load onto that factor. This is shown in Table 5 for the AP study below. Then the FAT, SAT and CST for each study is presented next. The complete Tables (FAT, SAT, CST) are in the appendices section.

The FAT was used to begin the interpretation by considering statements at the extreme poles (strongly agree, strongly disagree). The next stage was to consider Q sorts that significantly loaded onto the emergent factors from the SAT. Finally, the Crib sheet, was used to do a second pass at the findings from the CST. The CST contains comparisons between factors of the study. The factors are named to indicate the distinctive nature of each factor.

In addition to the presentation of each factor, the cohesion across factors within and across Q studies in support of each other but also sometimes in opposition or distinct to each other is presented in a thematic analysis.

Table 5: Factor outline for Q study AP variance accounted for by factor 1 and factor 2 with factor 1 and 2 loadings

Factors	Eigenvalue => 1	% Of variance accounted for by factor	Number of Q sort that loaded onto the factor at significance 0.25 with participant numbers and loaded participants in brackets. (McKenzie, 2009)
Factor 1	12	33%	20 (1,4,7,8,9,10,12,13,14,15,16,19,22,23,24,25,30,33,55,36)
Factor 2	2	5%	17 (2,3,5,6, 11,17,18,20,21,26,27,28,29,31,32,34,37)

In Table 6 below is the factor array Table (FAT1) for AP study factor 1 and 2.

Table 6: Factor array Table 1 (FAT1) for AP study factor 1 and factor 2 (APF1 and APF2)

Statements	F1	F2
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	-1	+1
2. Curriculum design at university lacks implementation of the UNCRPD.	-2	0
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	-3	+4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	0	+4
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4	-4
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+2	+4
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+2	+5
8. Students with VI spend more time overcoming challenges than learning at university.	-1	-2
9. The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.	+1	+5
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4	-3
11. The right to education is both a human right and an enabler of other human rights.	+2	+6

12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-2	-3
13. If all the necessary accommodations and support are in place, then VI would not be disabling in society.	-2	+2
14. Students with VI should demand their rights at university because the law protects their right to education.	-1	+3
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	0	+3
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	0	-1
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-3	+1
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+5	+6
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	0	+5
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4	-4
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-5	-5
22. Additional support for students with VI should be catered for on a needs basis.	-3	-1
23. It is important that visually impaired students create a social support system on campus.	-2	+1
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-1	0
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3	-3
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0	-2
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	-1	+2
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	0	0
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	+1	-1



31. Lack of assistive technology for students with VI at university is discriminatory.	+4	+2
32. University electronic library databases and their resources are generally accessible to students with VI.	-4	-4
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	+1	-2
34. Lecturers may lack the skills in providing multiple ways of representation, action and engagement using information technology.	+3	+1
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+1	+3
36. Students with VI have become more excluded in the time of COVID-19.	0	-3
37. There is little economic benefit for a university in making their course sites accessible.	-5	-5
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+2	+2
39. Content of a course site cannot be made accessible because it is discipline specific.	-6	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2	+2
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5	+3
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+3	0
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6	-6
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know. Using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.	+2	0
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2	-2
46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-3	-2
47. Curriculum is not just the plan but the entire experience of the education system.	+3	-1
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4	+3
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	+1	-4
50. Challenges to reading and writing for students with VI at university is significant.	+1	0
51. The curriculum at university is mainly designed for able bodied students.	+6	+1

52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+5	+4
53. An accessible online curriculum should be part of lecturer's performance appraisal.	+3	-1
54. Students with VI take longer to graduate from university.	-2	-3
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+3	0
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+4	+1
57. Students with VI don't want to compete to be the best student but just want to pass.	-5	-6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-1	-1
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.	+4	-2
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6	+2

## 5.2 Q Study: All-Participant (AP)

### 5.2.1.1 Factor outline

Factor 1 has an eigenvalue of 12 and this explains 33% of the study variance. 20 out of the 37 participants significantly loaded onto this factor with 16 female and four males. They came from a range of ages between 25 to 75 years of age. Among them were four students with VI. The other 16 were staff members who were comprised of three lecturers, three from CHED, six librarians, two from ICTS, and two from Disability Services Department.

Table 7: Q study AP variance accounted for by factor 1 and factor 2 with factor 1 and 2 loadings

Factor	Eigenvalue => 1	% Of variance accounted for by factor	Number of Q sort that loaded onto the factor at significance 0.25 with participant numbers and loaded participants in brackets (McKenzie, 2009)
Factor 1	12	33%	20 (1,4,7,8,9,10,12,13,14,15,16,19,22,23,24,25,30,33,55,36)

### 5.2.1 Factor 1: Accessible curriculum is also a technical issue

Table 8: Study analysis Table (SAT1) Table for Q sorts that significantly loaded onto all participant factor 1 (APF1)

Statements	Rank
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, academic and non-academic staff to shape organisational culture.	+6
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	+6
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-6
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-6
22. Additional support for students with VI should be catered for on a needs basis.	-6
53. An accessible online curriculum should be part of lecturer's performance appraisal.	+6
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+6
51. The curriculum at university is mainly designed for abled bodied students.	0
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+6
51. The curriculum at university is mainly designed for able bodied students.	-1
47. Curriculum is not just the plan but the entire experience of the education system.	+6

38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+6
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+6
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know. Using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.	+2
34. Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.	+6
57. Students with VI don't want to compete to be the best student but just want to pass.	-6
37. There is little economic benefit for a university in making their course sites accessible.	-6
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+6

The entire SAT1 Table showing other Q sorts that significantly loaded unto factor 1 can be seen in appendix 3. I only included the statements that were used for the interpretation in Table 8 above.

Table 9: Crib sheet Table 1 (CST1) for all participant study factor 1 (APF1)

Items ranked higher in factor 1 array than in factor 2 array	
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	0
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4
Items ranked lower in factor 1 array than in factor 2 array	
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	+2
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4

32. University electronic library databases and their resources are generally accessible to students with VI.	-4
---	----

The entire CST1 Table is available in appendix 4.

Using FAT1 in Table 6, SAT1 in Table 8 and CST1 in Table 9, I start with the interpretation of all participant Q study factor 1 (APF1).

#### 5.2.1.2 Factor interpretation

This factor represents the view that accessible curriculum is also a technical issue that is not prioritised at the university. Academics want to engage to make the curriculum accessible but due to competing demands of research and promotion, additional institutional support is needed. Lack of making it a priority influences how students with VI perceive the right to an accessible curriculum. For instance, even though developing content right from the start reduces the typical time, cost and resources needed to make the curriculum accessible (S60: +6 – FAT1), not doing this from the start may be why the curriculum is perceived to be mainly designed for able bodied students (S51: +6 – FAT1). Curriculum development from the start should be the responsibility of universities through the development of an electronic and information technology accessibility policy with steps taken to implement it across all levels, including training for faculty, academic and non-academic staff to shape the university's culture (S6: +6 – SAT1).

However, the current effort to achieve this is led by individual lecturers rather than the institution.

*“At the moment, the burden is on the lecturers who are not supported, rewarded or facilitated to do what is right. More is being squeezed from lecturers especially as we move to blended learning with absolutely no reward for adapting to the current context, ensuring universal access, or acknowledgement of the massive additional upskilling that the lecturers have had to take on” (S6: +6, P1 [SR]).*

This indicates lack of institutional support to achieving accessible curriculum. However, what was subtly evident was that there are a range of other factors that compete with time and effort lecturers dedicate to achieving an accessible curriculum. One factor has to do with a

lecturer's need for promotion and research output. For example, one lecturer commented that: *"Currently this learning (about accessible curriculum) will take place in time designated for research, thereby impacting on research outputs and promotion"* (S6: +6, P1 [SR]). Therefore, the perception that the curriculum is mainly designed for able bodied students (S51: +6 – FAT1) may further be because lecturers focus more on promotion and research output than on making the curriculum accessible. It may also demonstrate that the effort for an accessible curriculum is not necessarily aligned or of the same priority as research outputs and promotion. This is because

*"The portfolio that you teach on for promotion does not include a criteria around accessibility and if you want to have an academic career and be promoted, then follow that structure that been set by the university and not by the individual lecturer"* (Comment, P15 [FGD]).

The issues goes further because *"particularly over the last few years, teaching dominates and yet it's got a lower level of priority in terms of promotion...particularly now adapting to blended learning with the multiple demands"* (Comment, P1 [FGD]). Lecturers feel that accessibility is not prioritised and will not be as long as it is not valued in staff evaluation: *"If it becomes a promotion criteria that would make it certain that my Head of Department will be more concerned"* (Comment, P1 [FGD]). However, there is a concern that this may not happen even up to the year 2030 at UCT because *"UCT vision 2030 is about transformation, creating accessible inclusive teaching, changing the curriculum to reflect that but is there perhaps a misalignment between our key performance areas and what is in vision 2030"* (Comment, P7 [FGD]). This seems to suggest that if UCT vision 2030 speaks of accessible curriculum and this is not reflected in the academic key performance areas, how will UCT achieve vision 2030? It may be that the university's direction in this regard is:

*"That accessible curriculum is centralised to the disability unit which means it is the responsibility of the disability unit. There is a need to decentralize this responsibility but the skills to make teaching and learning accessible needs to be available across the university before decentralization can start"* (Comment, P13 [FGD]).

This reveals a tension between the current centralised system and the need to support each individual lecturer achieve accessible curriculum development.

The lack of support for academics and lack of time to make the curriculum accessible as suggested above indicates that a lot of the barriers that students with VI face arise from lack of attention to the curriculum, and not from their impairment (S16: +6 – SAT1). Supporting this argument, the view that it should not be the “*responsibility of individual students*” (S16: +6, P4 – SAT1 [SR]) to make the curriculum accessible is strongly supported. However, there may be instances where the impairment constitutes a barrier (S16: 0 - CST) which is confirmed in the staff only Q study.

Further, even if the impairment constitutes a barrier, making a course site accessible even when they are few students with VI is worth it (S43: -6 – FAT1) and even if the content of this course site is discipline specific, it can still be made accessible (S39: -6 – FAT1). The challenges are that academics are not skilled in accommodating students with VI in teaching, learning and assessment tasks (S21: -6 – SAT1) and that there is a lack of time for planning for reasonable accommodation for students with VI (S5: -6 – SAT1). When the support, time and planning are missing, this means “*lecturers are being asked to go the extra mile...I feel that it is morally essential that I attend... training in universal access, and aware that this will take place during the only 2 weeks that I have had available this year to work on my research*” (S5: -6, P1 – SAT1 [SR]).

*“I have worked extra hours this entire year to meet...the demands of online teaching – and previous years to adapt to protests, decoloniality, suicides, emergency remote teaching, and now blended learning....Morally I totally believe in universal course design and participation – I want to do it, I believe in it, I know I need training and I know that I am falling very short. But the personal costs within an unbearable existing workload where we have had crisis/student instability requiring additional commitment and time that is not factored in within normal work expectations every single year for the last 6 years... this makes going extra mile difficult. Design for universal participation should not require lecturers to go the extra mile – but should be supportively built into their jobs”* (S5: -6, P1 – SAT1 [SR]).

Currently, there is the perception that students with VI should not be catered for on an individual basis (S22: -6 – SAT1) and *“this sort of culture actually leads to those who are differently abled to be excluded”* (S22: -6, P3 – SAT1 [SR]). *“The bigger priority should be to put it into systemic change, but I know the pragmatic part is often what gets the attention because it is a problem in front of me right now”* (Comment, P13 [FGD]). This is why support for students with VI is usually at an individual level, and not at an institutional level (S28: +2 – CST1). There could be a way to accommodate both because on *“the institutional side is policy that should be in place that if a student with VI comes, that student will be accommodated but then when each student with VI arrives it is not a one size fits all”* (Comment, P5 [FGD]).

While students with VI value the well-meaning nature of academics, there was strong disagreement that they were skilled in accommodating students with VI in teaching, learning and assessment tasks (S21: -6 – SAT1).

*“I feel like my supervisors, they are not very knowledgeable on how to adapt things for my VI. They are supportive but I feel they are clueless basically on how to make things better for me...Maybe they mean well and they want to be there for students with disabilities especially VI, but I don’t think they are very knowledgeable”* (S21: -6, P8 – SAT1 [SR]).

This indicates that students with VI appreciate the well-meaning response from lecturers, but it needs to go beyond that to include training of lecturers in accessible curriculum.

While an accessible curriculum could be made as part of a lecturer’s performance appraisal (S53: +6 – SAT1), the view expressed in this factor stresses that *“nothing can be done or will improve for visually impaired students until the basics are in place – i.e., accessible content”* (S60: +6, P5 – SAT1 [SR]). Although accessible content development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required. (S42: +6 – SAT1). Given accessible curriculum is not part of a lecturer’s performance appraisal and therefore not part of their regular teaching practice this may be reason there is uncertainty as some academics think the curriculum is mainly designed for able bodied students while some do not (S51: 0 – SAT1).



In terms of support services, some progress has been made:

*“In terms of the learning management system that we are in the process of learning about and I think there is definitely progress there in terms of access for visually impaired students where Vula isn't the best with screen readers and voice over programs...and the new bright space program system is more accessible to the programs that visually impaired students will be using”* (Comment, P2 [FGD]). In terms of course development, *“we are currently developing models for blended learning courses that focus on more inclusive practices with input from disability studies staff this is through a centrally support university capacity development project, and we hope to be able to share these widely over the next few years”* (Comment, P1 [FGD]).

Further, the impact of an inaccessible curriculum for students with VI is far reaching. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities. (S15: +6 – SAT1). *“Education is one of the main motivators for a student with VI's life, to get up in the morning and to live and to breath...otherwise the student will be severely depressed”* (S15: +6, P8 – SAT1 [SR]). This may indicate that barriers in the curriculum can lead to performance, health, social and later to economic challenges for students with VI at or after university. However, it seems some parts of the curriculum are designed to accommodate students with VI (S51: -1 – SAT1).

With the deeper implications that the curriculum has for students with VI, it becomes evident that the curriculum is not just the plan but the entire experience of the education system (S47: +6 – SAT1). *“There is a social part that is very important, there is also other skills, other attributes that a student has to learn at university”* (S47: +6, P9 – SAT1 [SR]). *“It's a lot of factors that come into play in terms of developing a student or a person. It is not just about the curriculum”*. (S47: +6, P9 – SAT1 [SR]). This suggests the need for the inclusion of other factors that contribute to a student with VI's learning such as *“the emotional aspect which is hugely important”* (Comment, P11 [FGD]). This is so because *“often for a student with VI it actually does involve this element of disclosure, going up to a lecturer and actually saying oh I'm sorry I need this this this and this and that can actually be quite anxiety provoking”* (Comment, P17 [FGD]).

*“Even for the mere fact that when other students are writing in class and you are going to write in a separate venue but still need to explain to a lecturer why...even for you to wait for materials which needs to be converted to Braille or that waiting period cause a lot of anxiety because you don't know how long it'll take”* (Comment, P 15 [FGD]).

This suggests that students with VI have to expend greater *“emotional labour...it is so tiring so energy draining”* (Comment, P11 [FGD]). *“You are never going to speak up again, you then struggle on your own... because you just don't have that confidence”* (Comment, P5 [FGD]). This highlights the importance of confidence for students with VI at university but it goes further because *“even if you have the confidence, the fear of being labelled as the ungrateful or the most noisy blind person...to be...that troublemaker, always seeing negative things...we just want to complain all the time...is quite a lot”* (Comment, P15 [FGD]).

To accommodate students with VI learning means manual testing for accessibility which entails testing how accessible a course site is by a person with VI, not just by a sighted user of learning technology. This is because automated tools for checking for accessibility in such technologies will not find every accessibility problem, so human testing is still required. (S38, +6 – SAT). *“I know it can be costly, it can be time consuming but obviously these are things that need to be planned ahead”* (S38, +6, P9 – SAT1 [SR]).

This testing forms part of reasonable accommodation that is only sometimes factored into all planning for students with VI (S5: -4 – CST1).

In dealing with technology, people, not technology, create ableist assumptions because technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive (S40: +6 – SAT1). This is so because designers often generate and evaluate ideas based on what they know, using their own abilities as a baseline which makes for technology that is easy for non-disabled but difficult for students with VI (S44: +2 – SAT1). However, it is one thing to create accessible technology but another thing for end users such as lecturers to use it in accessible ways because lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using technology (S34: +6 – SAT1).

Despite the lack of skills from lecturers, students with VI still want to compete to be the best of their ability and not just to pass (S57: -6 – SAT1). *“I want to be successful. I hope to finish my PhD, I hope to study, be an academic. Maybe study other courses afterwards. I think it’s a crazy statement to say that we just want to pass. No. We are also hungry for success (S57: -6, P8 – SAT1 [SR]).*

A change is taking place towards an accessible curriculum. Even though the time and planning required to include students with VI is not factored into all planning of the curriculum (S5: -6 – SAT1), institutional training for academics is now being put in place to address this. *“I don’t think enough has been done until now to empower lecturers to understand the principles of Universal Design for Learning and also to embed this as an accountable responsibility in departments” (S5: -6, P13 – SAT1 [SR]).* Earlier institutional training for an accessible curriculum lacks this because the UCT disability policy which could have guided institutional training on accessible curriculum does not provide adequate recommendation for UDL principles (S20: -4 – CST1).

The former and recent institutional trainings on accessible curriculum are also perceived to foster economic benefit for a university in making their course sites accessible (S37: -6 – SAT1). However, *“is the purpose of a university economic benefit only? The institution is not linked to economic benefit but linked to economic benefit for the society” (S37: -6, P18 – SAT1 [SR]).* It therefore seems there may be a difference between the economic benefit of a university and the economic benefit of the society. Therefore,

*“We need to question the commercialization of the universities within a neo liberal or neo capitalist agenda,...critique what is happening in the universities and how we are dealing with the current trend to place universities within an economic model because universities are already there for the common good of building a knowledge base... we need to question the economic model where we need to prioritize certain people above others and that's not good for our society” (Comment, P1 [FGD]).*

It is however challenging for some universities to engage with accessible curriculum and economic benefit because *“we live in South Africa, where some of the universities are not fully publicly funded so were students still pay fees and it is kind of a small medium enterprise*

*business so in order for this universities to survive and be able to put back into society, they need to look at their own economic model” (Comment, P15 [FGD]).*

Furthermore, we need to include a standard set of limitations and exceptions to copyright rules in order to make them accessible to students with VIs. (S56: +6 – SAT1) because *“universities have moved to online instruction, university library websites are the primary communication channels to all students and these should be accessible and inclusive to visually impaired students”* (S56: +6, P12 – SAT1 [SR]), however they are not (S32: -4 – CST1).

In a nutshell, this factor suggests that accessible curriculum is also a technical issue which requires careful look at how accessible content, teaching and learning methods and assessment methods are. It is not prioritised at universities, and lecturers can’t attend to it on their own due to competing demands. Lack of making it a priority may take an emotional toll on students with VI and it seems the commercialisation of universities (focus on students who can generate profit) weakens the resolve to make it a priority, therefore valuing some non-disabled students over students with VI because the curriculum caters more to non-disabled students.

## **5.2.2 Factor 2: Institutional leadership lacks recognition of the value of accessibility design from the start**

### *5.2.2.1 Factor outline*

Factor 2 has an eigenvalue of two and this explains 5% of the study variance. 17 participants significantly loaded onto this factor with ten females and seven males. They also came from a range of ages between 25 to 75 years of age. Among them were five students with VI. The other 12 staff members were comprised of two lecturers, two from CHED, two Librarians, three from Disability Services Department and three from ICTS.

Table 10: Q study all participants variance accounted for by factor 2 and factor 2 loadings

Factors	Eigenvalue => 1	% of variance accounted for by factor	Number of Q sort that loaded onto the factor at significance 0.25 with participant numbers and loaded participants in brackets (McKenzie, 2009)
Factor 2	2	5%	17 (2,3,5,6, 11,17,18,20,21,26,27,28,29,31,32,34,37)

Table 11: Study analysis Table 2 (SAT2) Table for Q sorts that significantly loaded onto APF2

Statements	Rank
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	+6
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+6
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	+6
51. The curriculum at university is mainly designed for able bodied students.	+6
50. Challenges to reading and writing for students with VI at university is significant.	+6
11. The right to education is both a human right and an enabler of other human rights.	+6
8. Students with VI spend more time overcoming challenges than learning at university.	+6
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	-2
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	-6
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-6
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	-6
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-6

46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-6
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	-6
54. Students with VI take longer to graduate from university.	-6

The entire SAT2 Table showing other Q sorts that significantly loaded onto factor 2 can be seen in appendix 5. I only included the statements that were used for the interpretation in Table 11 above.

Table 12: Crib sheet Table 2 (CST2) for all participant study factor 2 (APF2)

Items ranked higher in factor 2 array than in factor 1 array	Rank
22. Additional support for students with VI should be catered for on a needs basis.	-1
58. Often, a major concern for universities to procure accessible information and communication technologies is due to their high cost.	-1
3. The Right to education depends upon the accessibility of information and communication technologies for students with VI.	+4

The entire CST1 Table is available in appendix 6.

Using FAT1 from Table 6, SAT2 from Table 11 and CST2 from Table 12, I continue with the interpretation of all participant factor 2 (APF2).

### 5.2.2.2 Factor interpretation

This factor represents the view that institutional leadership lacks recognition of the value of accessibility design from the start both for the curriculum and support services. Therefore, universities opt more for individual support of students with VI above institutional support. Another result of this lack of value for accessibility design from the start is that universities adopt a retrofitting model for both curriculum design and support services. These are evident because even though the right to education is both a human right and an enabler of other human rights (S11: +6 – FAT2), education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and

achievement (S1: +6 – SAT2). Further, even though students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities this is not always realised: (S18: +6 – FAT2),

*“Schools for children with disabilities are not equipped with the accommodations needed to ensure full accessibility and participation. The curriculum is not on par with schools that are for persons without disabilities. In fact, these schools are often extremely neglected which demonstrates that they are built just for the sake of keeping children occupied instead of acknowledging them as an investment to society and the economy, like everyone else”* (S1: +6, P2 – FAT2 [SR]).

These challenges of unequal access for students with VI in schools seems to indicate that lack of full participation in the curriculum for students with VI at university also occurs at schools and results in poor university preparation.

This factor also highlights that accessibility of course sites is the responsibility of a university and also an opportunity for inclusion of students with VI (S7: +6 – SAT2). However, this has not been the case because *“disability related matters are most times left to the disability units of universities and not mainstreamed as this is seen as ‘too much work’ that people are not keen on taking responsibility for”* (S7: +6 P2 – SAT2 [SR]). Therefore, a proactive approach is needed to make the curriculum inclusive of students with VIs (S52: +6 – SAT2).

*“Student system support should engage with the Disability Unit to provide individual students with assistance when completing student administrative tasks. Often these tasks are a one-off exercise and to me it makes sense to have an extensive support system to assist students to complete these one of tasks via a Teams session”* (S52: +6, P3 – SAT2 [SR]).

This indicates the need for individual support for administrative tasks for students with VI. The majority of support for administrative tasks should be system wide, however, and less on an individual basis which is a similar view of factor 1 although factor 1’s disagreement was stronger (S22: -1 – CST2).

One of the challenges to providing this support has to do with the high cost of procuring accessible information and communication technologies (S58: +6 – SAT2; S58: -1 – CST2). Another is the resource constraints needed for testing, training and documentation.

*“The reality is that my team works under very tight resource constraints and it is a serious challenge to deliver on the existing project objectives. Although the screen reader mode does offer benefits out of the box for students with VI using screen reader software, there is a significant training and documentation exercise to understand how PeopleSoft university system and screen reader software work together, including navigating the keyboard with a mouse. Custom created components may need to be revisited in order to ensure that they adhere to the principles of the PeopleSoft accessibility guide as well as extensive testing. Delivered components that need to be customised will put an additional load on upgrade projects as customisations will need to be re-applied and re-tested”* (S58: +6, P3 – SAT2 [SR]).

This describes a retrofitting process and consultation with the PeopleSoft accessibility guide after the implementation rather than before.

Another challenge to the institutional approach seems to be tied to the number of students with VI at the university because

*“when courses are designed, for every course like ninety-five or ninety eight percent of the students don’t have limitations. I think that is probably why, courses are mostly designed for people without limitations, because most of the students don’t have any limitations”* (S51: +6, P8 - SAT2 [SR]).

This contrasts with factor 1 which, although it indicated a similar view, also noted that the curriculum may or may not be designed for students with VI and in few instances is designed for students with VI. However, this factor, similarly to factor 1, further revealed that even if only a few or no students with VI are present at university, it is still worth it to make course sites that are part of the curriculum accessible (S43: -6 – FAT2).



It is also appropriate to consider other modalities to learning because challenges to reading and writing for students with VI at university are significant (S50: +6 – SAT2). They are significant because *“I think the problem with university is that the ability to read and write is associated with intelligence and so, if you can’t... it’s usually perceived that I am not smart enough to read and write”* (S50: +6, P14 – SAT2 [SR]) and therefore other modalities are not considered. This suggests *“that there is an average student and this average student...and I think it is unspoken, but that is what university caters for and how students fall out of...this ideal student that is at UCT”* (Comment, P13 [FGD]).

Being considered not smart enough due to lack of accommodation of their learning needs makes students with VI question the implementation of the right to education as both a human right and an enabler of other human rights (S11: +6 – SAT2). This is more so because students with VI spend more time overcoming challenges than learning at university (S8: +6 – SAT2).

*“This right that I have been given to be at a university, is more challenging to me. So I even ask myself as to what exactly does it mean when they say I have a right to education, yet me getting the right to education is more stressful, is even more challenging, so I spend more time fighting or trying to gain this right that I have to education, whereas if it was the other way around, if I have the right to education, as the statement says, I won’t have to spend as much time spending on my challenges than the learning. So, what is the point then? I think to me, they contradict each other totally to me...so I often wonder, is this right to me a right or is it more of a struggle for me to obtain this right?”* (S11: +6, P15 – SAT2 [SR]).

This may explain why there is disagreement (as opposed to factor 1) that students with VI have a right to accessible education equal to that of non-disabled students to engage in the same interactions and enjoy the same services as students without disabilities (S18: -2 – SAT2). It therefore seems that the right to education for students with VI is more of an aspiration rather than an experience because, on paper, this right is being acknowledged, but this is not so with implementation which students with VI experience daily.

This aspirational nature of right to education is evident because there is a perception at university that developing accessible content right from the start does not reduce the time,

cost and resources needed to adapt it into an accessible format at a later stage which differs from factor 1 that had various views from total agreement to slight disagreement (S60: -6 – SAT2).

*“Our experience on delivering on projects at UCT is that extensive changes are implemented post go-live. Because of scarce resources we need to follow an approach which does not spend significant time developing accessibility for interfaces which will change requiring the accessibility work to be repeated. Once development is stable and implemented, we can do the accessibility development if it makes practical sense.”*  
(S60: -6, P3 – SAT2 [SR]).

This again indicates a retrofitting model, where the system is first built and accessibility considered as an addition and only where it makes practical sense. Further, the perception that UCT does not have acceptable levels of adaptation to accommodate learning of students with VI (S10: -6 – SAT2) supports this. Therefore, designing accessible systems and content right from the start is not a design path the university takes but on the other hand the university agrees that they don't have acceptable levels of adaptation to accommodate learning for students with VI. This adaptation is seen as something that will happen in future after the basics such as accessible text, pictures, audio, video and learning management systems are in place. There therefore seems to be a lack of understanding of how the foundational accessible design of content and systems affects the level of adaptation to accommodate students with VI. The perception is that *“being proactive in having a support system to assist disabled students will mitigate this issue”* (S60: -6, P3 – SAT2 [SR]) when individual support is needed. Therefore, within this factor there is a concern from students with VI that they must fight for education and within the same factor we have staff who do not see the importance of accessible design from the start. Students with VIs are saying foundational design should guarantee their right to education and reduce their need to fight for this right, but from the staff perspective the right to education does not guarantee implementation without considering other factors such as changing legacy systems and provision for the required time and resources. Both students with VI and staff recognise the importance of foundational change but prioritise it differently. Students with VI see it from an accessibility from the start point of view while staff from a retrofitting point of view. This

may be reasons why the right to education for students with VI remains on paper but is not implemented.

Within this factor, there is the perception that owners of copyrighted educational materials should not be the only ones responsible in introducing a standard set of limitations and exceptions to copyright rules that are available in formats designed to be accessible to students with VI, which was different to factor 1 that indicated that copyright owners should be solely responsible (S56: -6 – SAT2). As a participant noted, this is because,

*“I don’t think that it should lie with the owners of such materials alone. I think it should be a law that government put in place to say that, like the UN conventions for instance. Especially like textbook materials and the sort of learning materials. There should be rules and regulations in place to say, people who write such materials have to make sure that it is accessible in different formats so that people who have to use those formats because of their disability can access them. I don’t feel the writers should have the only responsibility. It has to be a rule”* (S56: -6, P5 – SAT2 [SR]).

There is an acknowledgement opposite to factor 1 that some progress has been made as the online aspect of the curriculum does not present more challenges than benefits for students with VI at university (S49: -6 – SAT2).

*“Yeah...what actually helped me quite a lot was having information available like on Vula, slides helped me quite a lot because I had a very hard time when lecturers would use the board, because I won’t be able to see what is on the board. But, if you have the information online, available online for me it’s actually easier”* (S49: -6, P8 – SAT2 [SR]).

This indicates that where some students with VI might experience more challenges online, others may find it beneficial.

Irrespective of the challenges, universities should not use cost as a reason not to make a course site accessible and they should not wait till they are forced to make course sites accessible (S46: -6 – SAT2). But at the same time, multiple skills and engagement in use of

technology within the curriculum needed by students with VI to learn not only at university but across is not valued (S29: -6 – SAT2). This is despite knowing that the right to education for students with VI depends on accessible information and communication technologies (S3: +4 – CST2). If multiple skills and engagement in use of technology are not present, students with VI *“miss out on a lot of cues from other people, socially... because... they are not able to see...other people's faces”* (Comment, P11 [FGD]). This limits the non-academic learning which non-disabled students *“pick up so quickly”* (Comment, P11 [FGD]).

Therefore, students with VI do not take longer to graduate from university (S54: -6 – SAT2) but rather *“all of us disabled students... we always finish in record time”* (S54: -6 P15 – SAT2 [SR]). However, there is the perception that finishing on time has some disadvantages because

*“we complain about inaccessibility..., yet we still fight to finish on time....We have this notion that we want to be seen as the heroes or we want to overcome against all odds that we made it. Yet at the same time, it could be a danger because our struggles become nothing because we just achieved whatever we want to achieve”* (S54: -6, P15 – SAT2).

Therefore, if few students with VI overcome the barriers and graduate, it may indicate there is adequate support for students with VI and as such the challenges for the greater number of students with VI with different challenges may be ignored.

The reason students with VI want to compete to be the best student academically and not just want to pass, a view similar to factor 1 (S57: -6 – FAT2), is because as a students with VI

*“you’ve been told you will never be the best. You have a disadvantage that can never ever be overcome, so just be comfortable with passing. That should be good enough”* (S57: -6, P14 – FAT2). *“But that is not the desire of the student going through the course, if I can get fifty percent, that’s not good enough...And this perception goes also to the effort that the lecturers put in, because instead of pushing you, as they push everybody else, with a fifty five percent, you get a well done. As opposed to, I see something in you, you can do better”* (S57: -6, P14 – FAT2 [SR]).

While factor 1 indicates that accessible curriculum is also a technical issue, factor 2 indicates that recognition of the value of accessible curriculum is in question because there is little evidence for this. Support systems and curriculum development consult accessibility guides only after systems are implemented and accessible curriculum development from the start is not valued. As a result, both curriculum design and support systems adopt a retrofitting model making SVI question if the right to education can be attained.

### 5.3 Q Study: staff only (SO)

A staff only Q (SO) study was done to see if there were aspects that were distinct or different to AP and SVO Q studies. Therefore, areas that were similar were left out but it was indicated where such similarities existed.

*Table 13: Q study staff only variance accounted for by factor 1 and factor 1 loadings*

Factors	Eigenvalue => 1	% of variance accounted for by factor	Number of Q sort that loaded onto the factor at significance 0.37 with participant numbers and loaded participants in brackets (McKenzie, 2009)
Factor 1	9	33%	17(1,2,3,4,7,8,9,11,12,13,16,17,19,23,24,27,28)
Factor 2	1	4%	9 (5,6,10,15,18,20,21,22,26)

In Table 14 below is the factor array Table (FAT2) for SO study factor 1 and 2.

Table 14: Factor array Table 2 (FAT2) for SO study factor 1 and factor 2 (SOF1 and SOF2)

Statements	F1	F2
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	0	-3
2. Curriculum design at university lacks implementation of the UNCRPD.	0	-3
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	-3	+4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+2	+1
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4	-3
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and takes steps to implement it across all levels, including training for faculty, academic and non-academic staff to shape organisational culture.	+4	+2
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+4	+2
8. Students with VI spend more time overcoming challenges than learning at university.	-2	-2
9. The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+2	+4
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4	-4
11. The right to education is both a human right and an enabler of other human rights.	+5	+4
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-2	-5
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	0	-2
14. Students with VI should demand their rights at university because the law protects their right to education.	-1	+1
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+1	+3
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	+3	-5
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-3	+1
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+6	+5

19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+1	+2
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-3	-4
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-6	-3
22. Additional support for students with VI should be catered for on a needs basis.	-3	-1
23. It is important that visually impaired students create a social support system on campus.	-1	+3
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-1	-2
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3	-2
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0	-1
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	-1	0
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	-1	+3
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	0	0
31. Lack of assistive technology for students with VI at university is discriminatory.	+2	+2
32. University electronic library databases and their resources are generally accessible to students with VI.	-4	-2
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	0	-1
34. Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.	+2	0
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+1	+5
36. Students with VI have become more excluded in the time of COVID-19.	-2	-1
37. There is little economic benefit for a university in making their course sites accessible.	-5	-4
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+1	+4
39. Content of a course site cannot be made accessible because it is discipline specific.	-5	-6

40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+3	0
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5	+3
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+3	+2
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6	-5
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know, using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.	+1	+2
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2	-1
46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-4	+1
47. Curriculum is not just the plan but the entire experience of the education system.	+1	+1
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+3	+5
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-1	-3
50. Challenges to reading and writing for students with VI at university are significant.	0	-1
51. The curriculum at university is mainly designed for able bodied students.	+5	+1
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+4	+6
53. An accessible online curriculum should be part of lecturer's performance appraisal.	+3	0
54. Students with VI take longer to graduate from university.	-2	-4
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+4	0
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+2	+6
57. Students with VI don't want to compete to be the best student but just want to pass.	-5	-6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-2	+3
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	+2	-2



60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6	0
---	----	---

### 5.3.1 Factor 1: Partial rights – access but not full participation

#### 5.3.1.1 Factor outline

Factor 1 has an eigenvalue of nine and this explains 33% of the study variance. 17 out of 28 participants significantly loaded onto this factor with 14 female and three males. They came from a range of ages between 25 to 75 years of age. These were all staff members of which five were lecturers, five were from CHED and three were from library services and four from disability services.

Table 15: Q study staff only variance accounted for by factor 1 and factor 1 loadings

Factors	Eigenvalue => 1	% of variance accounted for by factor	Number of Q sort that loaded onto the factor at significance 0.37 with participant numbers and loaded participants in brackets (McKenzie, 2009)
Factor 1	9	33%	17(1,2,3,4,7,8,9,11,12,13,16,17,19,23,24,27,28)

Table 16: Study analysis Table 3 (SAT3) Table for Q sorts that significantly loaded onto staff only Factor 1 (SOF1)

Statements	Rank
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	-1
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	+6
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+6

The entire SAT3 Table showing other Q sorts that significantly loaded onto factor 1 can be seen in appendix 8. I only included the statements that were used for the interpretation in Table 16 above.

Table 17: Crib sheet Table 3 (CST3) for staff only factor 1 (SOF1)

Items ranked higher in factor 1 array than in factor 2 array	Rank
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	0
2. Curriculum design at university lacks implementation of the UNCRPD.	0
8. Students with VI spend more time overcoming challenges than learning at university.	-2
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+2
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	0
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-2
53. An accessible online curriculum should be part of lecturer's performance appraisal.	+3
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+4
Items ranked lower in factor 1 array than in factor 2 array	
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	-3
14. Students with VI should demand their rights at university because the law protects their right to education.	-1
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	-1
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+1

The entire CST3 Table is available in appendix 9.

Using FAT2 Table from Table 14, SAT3 Table from Table 16 and CST3 Table from Table 17, I continue with the interpretation of SO factor 1 below.

### 5.3.1.2 Factor interpretation

This factor represents the view that students with VI experience partial right to education and that they may have access to education but not full participation in education. The implication

of their access to education, similar to the All-Participant Q sort, is that making a course site accessible even when there are only few students with VI is worth it (S43: -6 – FAT 3).

Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same actions and enjoy the same services; however, there may be instances where they don't enjoy this right (S18: +6 – FAT3; S18: -1 – SAT3). Having the right and not having the right may be why sometimes education for students with VI is seen from the point of access rather than participation and at other times seen from participation and not just access (S1: 0 – CST3). This implies that the right to education for students with VI may be clear but its translation into full participation for students with VI, not just access to university, is not clear. This lack of clarity may also be why curriculum design at the university may or may not implement the UNCRPD (S2: 0 – CST3). Where there is clarity, students with VI would be able to spend more time learning than overcoming challenges (S8: -2 – CST3). Whatever the case, there is a moral argument for accessibility with respect to the social contract not to leave anyone behind (S4: +2 – CST3) even though UCT lacks acceptable levels of adaptation to accommodate learning of students with VI (S10: -4 – CST3). However, if all the necessary accommodations and supports are in place, VI may no longer become disabling in society but, at the same time, it may still be (S13: 0 – CST3). This seems to suggest that accessibility may not be achieved 100% but achievement should aim to be close to 100%. With the necessary accommodation, it may still be disabling because the right to education is not seen as depending on the accessibility of information and communication technologies and, further, it may be disabling because students with VI can't demand their right because their right to education is not always protected (S3: -3 – CST3; S14: -1 – CST3). Not only that but there is a lack of access to multiple skills and engagement in the use of technology so students with VI can work at home, school and social contexts (S29: -1 – CST3). Therefore, within this factor is the perception that, with reasonable accommodation, VI may no longer become disabling but at the same time saying it still can. This may be the reason students with VI experience partial rights to education because their rights is both supported in some instances such as provision of reasonable accommodation and not supported in other instances such as lack of protection for their rights. Furthermore, making a course site accessible even when there are few students with VI is worth it, as also expressed in the all participant Q study (S43: -6 – FAT3).

When people say it is not worth it, this may be due to *“attitudinal barriers, the lack of knowledge around disability and support needs for students with VI”* (S43: -6, P9 – FAT3 [SR]).

This challenge of an inaccessible course site may also be because there is a hidden anxiety about teaching students with VI which unconsciously influences effort to make teaching and learning accessible (S59: +6 – SAT3). Therefore, a proactive approach is needed to make the curriculum accessible (S52: +6 – SAT3) and this can be done by *“continuously reflecting upon our approaches as well as get input from different stakeholders so that what we teach and design is inclusive and open to change and improvement for the success of all students”* (S52: +6, P8 – SAT3 [SR]). *“This should be a continuous process that helps us to work towards changing the culture around inclusion”* (Comment, P13 [SR]). However, achieving accessible pedagogy is challenging if accessibility is not thought of at the design stage of the curriculum and also due to the lack of skills of UCT academics in accommodating students with VI in teaching, learning and assessment tasks (S19: +1 – CST3; S21: -6 – FAT3). In addition, the proactive approach may consider using the threat of legal action; however, this may be too confrontational in the light of altruistic desires to accommodate students with VI (S12: -2 – CST3).

To start this proactive approach, there was the perception that *“academics should be educated to develop accessible curriculum from the beginning so that it becomes part of their daily task, so that they get used to it and as such they are exposed to it”*, including making it part of their performance appraisal (S60: +6, P10 – FAT3 [SR]; S53 +3 – CST3). However, care should be taken because as lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives (S55: +4 – CST3).

Within this factor was the perception that the right to education is seen from the point of access rather than full participation but sometimes from full participation and not just access. Lack of clarity about right to education in implementation results in partial rights to education for students with VI. Even though the right to education is observed, this factor indicated that students with VI go through many challenges that limit their right to education thereby limiting full participation. These barriers include attitude and hidden anxiety to teaching students with VI which may also affect support for accessible course sites when only a few students with VI are at university. Clearly a proactive approach with accessibility from the design stage is needed, similar to the all participant study.

### 5.3.2 Factor 2: Enablers and barriers to students with VI participation varies

#### 5.3.2.1 Factor outline

Factor 2 has an eigenvalue of one and this explains 4% of the study variance. Nine out of 28 participants significantly loaded onto this factor with four female and five males. They came from a range of ages between 40 to 75 years of age. These were all staff members with four coming from ICTS and five were librarians.

Table 18: Q study staff only variance accounted for by factor 2 and factor 2 loadings

Factors	Eigenvalue => 1	% of variance accounted for by factor	Number of Q sort that loaded onto the factor at significance 0.37 with participant numbers and loaded participants in brackets (McKenzie, 2009)
Factor 2	1	4%	9 (5,6,10,15,18,20,21,22,26)

Table 19: Study analysis Table 4 (SAT4) Table for Q sorts that significantly loaded onto SO factor 2 (SOF2)

Statements	Rank
9. The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+6
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+6
14. Students with VI should demand their rights at university because the law protects their right to education.	+6
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-6
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-6
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	-6

The entire SAT4 Table showing other Q sorts that significantly loaded onto factor 2 can be seen in appendix 10. I only included the statements that were used for the interpretation in Table 19 above.

Table 20: Crib sheet Table 4 (CST4) for staff only factor 2 (SOF2)

Items ranked higher in factor 1 array than in factor 2 array	Rank
23. It is important that visually impaired students create a social support system on campus.	+3
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
Items Ranked Lower in Factor 2 Array than in Other Factor Arrays	
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	0
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	-3
2. Curriculum design at university lacks implementation of the UNCRPD.	-3
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	-1
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	-1
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	-2
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	-5
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-3
8. Students with VI spend more time overcoming challenges than learning at university.	-2

The entire CST4 Table is available in appendix 11.

Using FAT2 Table from Table 14, SAT4 Table from Table 19 and CST4 Table from Table 20, I continue with the interpretation of SO factor 2 below.

### 5.3.2.2 Factor Interpretation

This factor represents the view that enablers and barriers to students with VI participation varies. The right to education enables their independence allowing students with VI to be autonomous and in control of their own learning which in turn builds their confidence, respect and dignity (S9: +6 – SAT4). However, a course site that mostly uses the mouse for navigation rather than the keyboard, which most students with VI use (S35: +6 – SAT4), limits this independence to learning. Therefore, students with VI need to demand their right at university because the law protects their right to education (S14: +6 – SAT4) and it is important that they create a social support system on campus (S23: +3 – CST4). This supports the perception from factor 1 that students with VI have partial rights; therefore, the perception from factor 2 that they need to demand their rights.

Students with VI also want to compete to be the best students and not just to pass (S57: -6 – FAT4) similar to the all participant Q study. However, similar to factor 1, this becomes challenging if the university where they study, such as UCT, does not have acceptable levels of adaptation to accommodate their learning (S10: -4 – CST4) and also if UCT disability policy lacks adequate recommendations for UDL principles for new and existing online courses (S20: -4 – CST4). This may be so because there seems to be uncertainty that developing content right from the start reduces the typical time, cost and resources needed to make the curriculum accessible which was different to factor 1's strong agreement (S60: 0 – CST4). Therefore, it seems, on the one hand, students with VI should exercise agency *"because universities also have more pertinent things that they have to see to, so it also has to be the responsibility from the person with impairment (Comment, P18 [SR])*. However, on the other hand, this may be hampered if the university has unacceptable levels of adaptation to accommodate students with VI, but does not support UDL principles and is unsure of the benefits of developing accessible content at the design stage.

Altruistic desire seems to be a greater motivation than the threat of legal action to accommodate the needs of students with VI (S12: -6 – SAT4) because there is the perception that *"legal action should only be the last resort to accommodating the needs of students with VI"* (S12: -6, P8 – SAT4 [SR]). However, *"if there are more lawsuits on accessibility, institutions*

*might be more likely to do the right thing*” (Comment, P9 [SR]). Part of doing the right thing would be recognition that providing multiple ways to complete an educational task with provision for alternative forms of assessment is not a lot of work (S17: -6 – SAT4) and hidden anxieties about teaching students with VI should not unconsciously influence efforts to make teaching and learning accessible, a view opposite to factor 1’s strong agreement (S59: -6 – SAT4). *“Universities just need to ensure that students with VI are able to access and interact with university systems fully just like any other student”* (S17: -6, P4 – SAT4 [SR]). To realise this, a proactive approach similar to factor 1 in making the curriculum inclusive is needed (S52: +6 – FAT4) and one of such proactive approaches is that education for students with VI should be mostly seen from a point of participation and achievement rather than a point of access (S1: -3 – CST4). This indicates, similar to factor 1, that curriculum design at university may have some implementation of the UNCRPD (S2: -3 – CST4). Access to multiple skills in use of technology with access to opportunities to acquire such skills has in a few instances been considered for students with VI (S27: -1 – CST4). Students with VI, in a few instances, have also been consulted about ways to complete educational tasks without lowering educational standards (S33: -1 – CST4).

It is further noted that even if all the necessary accommodations and supports are in place, some aspects of VI would still be disabling in society (S13: -2 – CST4) similar to factor 1 because sometimes the impairment causes the learning difficulty and not just the environmental or societal barriers that students with VI face (S16: -5 – CST4). This acknowledges that sometimes the impairment is what causes the disability.

The online aspect of the curriculum does not always present more challenges than benefits for students with VI at university (S49: -3 – CST4) which is maybe sometimes why, similar to factor 1, students with VI are able to spend more time learning than overcoming challenges at university (S8: -2 – CST4).

This factor suggests that enablers such as UDL implementation and barriers such as inaccessible course site fragments students with VI participation in the curriculum. On the one hand the right to education enables their independence but on the other hand lack of UDL implementation limits this. Lawsuits may help to compel universities to adopt accessible



curriculum but universities are currently motivated by altruistic desires such as charity which may limit the participation of students with VI because support for students with VI will mainly happen when universities feel like it and not as a right of the student with VI. Factor 2 therefore differs from factor 1 because factor 1 noted that students with VI have partial rights, have access but not full participation, while factor 2 notes that enablers and barriers to this full participation varies.

## 5.4 Q Study: students with VI only (SVIO)

### 5.4.1 Factor 1: If not provided for or tested, it is discrimination

Students with VI Q study was done to see if there were aspects that were distinct or different to the all participant Q study and staff only Q study. Therefore, areas that were similar or different were indicated.

#### 5.4.1.1 Factor outline

Factor 1 has an eigenvalue of three and this explains 33% of the study variance. Four out of nine participants significantly loaded onto this factor with three females and one male. They came from a range of ages between 25 to 75 years of age. There was only one significant factor for this study

*Table 21: Q study students with VI only variance accounted for by factor 1 and factor 1 loadings*

Factors	Eigenvalue => 1	% of variance accounted for by factor	Number of Q sort that loaded unto the factor at significance 0.65 with participant numbers and loaded participants in brackets (McKenzie, 2009)
Factor 1	3	33%	4 (2,3,4,7)

Table 22: Factor array Table 3 (FAT3) for students with VI (SVIO) study factor 1 (SVIOF1)

Statements	F1
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	-1
2. Curriculum design at university lacks implementation of the UNCRPD.	-1
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	-4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	-1
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+4
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+4
8. Students with VI spend more time overcoming challenges than learning at university.	+2
9. The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+2
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
11. The right to education is both a human right and an enabler of other human rights.	+1
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-3
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	+1
14. Students with VI should demand their rights at university because the law protects their right to education.	0
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	-1
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	-2
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-2
18. Students with VI have a right to accessible education equal to those of non-disabled students to engage in the same interactions, and enjoy the same services as students without disabilities.	+3
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+2

20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-3
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-6
22. Additional support for students with VI should be catered for on a needs basis.	0
23. It is important that visually impaired students create a social support system on campus.	-2
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-2
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-5
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	-1
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	0
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	+1
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	+1
31. Lack of assistive technology for students with VI at university is discriminatory.	+6
32. University electronic library databases and their resources are generally accessible to students with VI.	-3
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	+3
34. Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.	0
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	-2
36. Students with VI have become more excluded in the time of COVID-19.	+3
37. There is little economic benefit for a university in making their course sites accessible.	-3
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+5
39. Content of a course site cannot be made accessible because its discipline specific.	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2

41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+3
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	-1
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all	-5
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know. Using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.	0
45. It does not make sense to create just a black and white course site because someone can't see colour.	-3
46. Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site to be accessible unless they are forced to.	-2
47. Curriculum is not just the plan but the entire experience of the education system.	+6
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	+4
50. Challenges to reading and writing for students with VI at university is significant.	+5
51. The curriculum at university is mainly designed for abled bodied students.	+5
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+3
53. An accessible online curriculum should be part of lecturer's performance appraisal.	0
54. Students with VI take longer to graduate from university.	-4
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+1
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+2
57. Students with VI don't want to compete to be the best student but just want to pass.	-6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	0
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.	+1
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+2

Table 23: Study analysis Table 5 (SAT5) Table for Q sorts that significantly loaded unto SVIO Factor 1 (SVIOF1)

Statements	Rank
39. Content of a course site cannot be made accessible because it is discipline specific.	-6

The entire SAT5 Table showing other Q sorts that significantly loaded unto factor 1 can be seen in appendix 13. I only included the statement that was used for the interpretation in Table 23 above.

Using FAT3 Table from Table 22 and SAT5 Table from Table 23, I finish the interpretation chapter with SVIO factor 1 below. SVIO only had one significant factor.

#### 5.4.1.2 Factor interpretation

This factor represents the view that lack of accessible assistive technology and accessible ICTs constitute a barrier for SVI that can impact success at university. Further, there is a perception that the curriculum is not just the plan at university but the entire experience of the education system which would include assistive technology and accessible ICTs (S47: +6 – FAT5). This was a similar view from the all participant Q study. Therefore, lack of assistive technology for students with VI at university is perceived as being discriminatory (S31: +6 – FAT5) and as such negatively impacts on the experience of the curriculum for students with VI.

Regarding this factor, as similarly noted in the all participants Q study, even with the challenge of having a discipline-specific course site, it is still no reason for such a course site to be inaccessible (S39: -6 – SAT5). However, this factor revealed that discipline-specific websites are inaccessible because *“you can’t just judge or make decisions while you have not tested your site with students with VI. There has to be human testing to know for sure whether the person can’t achieve certain things, or they can. They may be able to but just need special conditions”* (S39: -6, P2 – SAT5 [SR]). Therefore, a question arises from this: do discipline specific websites at universities plan to or do actually test their course sites for accessibility?

Within this factor is the perception of participants that lack of accessible assistive technology and accessible ICTs constitute a barrier for SVI that can impact success at university. Hence, this factor suggests that availability of AT, and testing of course websites with a person with VI forms part of the entire experience of the education system. Therefore, if any of these strategies are missing, it can be considered as discrimination.

Factor 2 had an eigenvalue of 0.45 and as such does not meet the criteria for analysis as a factor has to have an eigenvalue of at least one. This is because an eigenvalue of less than one accounts for less study variance and as such is a weaker indication of the strength and potential explanatory power of the factor (Watts & Stenner, 2012).

## **5.5 Conclusion**

In this chapter, I presented the findings of the 3 Q studies: all participants (AP), staff only (SO) and students with VI only (SVIO). The AP Q study revealed that accessible curriculum was also a technical issue which has not been factored into university teaching and learning. As a result, academics find it challenging to engage with it due to competing demands. One of those demands is the pressure that comes from the commercialisation of the university which weakens the resolve to make accessible curriculum a priority because it focuses on a certain kind of student rather than all students. The study also revealed that the curriculum is not seen as a technical issue because the university's curriculum development and supports services provision operates within a retrofitting model where issues of accessible curriculum are addressed only after curriculum and support services are developed. Staff only (SO) study revealed that students with VI experience partial rights to education and as such have access to education but not full participation. This may be as a result of the retrofitting model from the AP study that only considers accessibility after curriculum and support services are developed. SO Q study further revealed that enablers and barriers to education that students with VI experience vary and as such they don't get a uniform experience of the education system but fragmented one. Finally, the student with VI (SVIO) Q study showed that tools used in teaching and learning for SVI are either not available or accessible as such can be considered discrimination. All this suggest the reasons students with VI experience partial rights to education, access but not with full participation in education.

## Chapter 6 - Discussion

### 6.1 Introduction

The findings chapter presented the interpretation of the factors for the three Q studies: Q study all participants, Q study staff only and Q study students with VI only including survey responses and focus group discussion feedback. Based on these results, this chapter will focus on addressing the research question and sub-questions to conclude how staff and students at UCT understand equitable access to the curriculum for students with VI. The research question and sub-questions to be addressed are below:

**Main research question:** What is the staff and student understanding on equitable access to the curriculum for students with VI at UCT?

**Research sub-question 1:** To what extent are the UNCRPD and UDL considered in teaching and learning at UCT for students with VI?

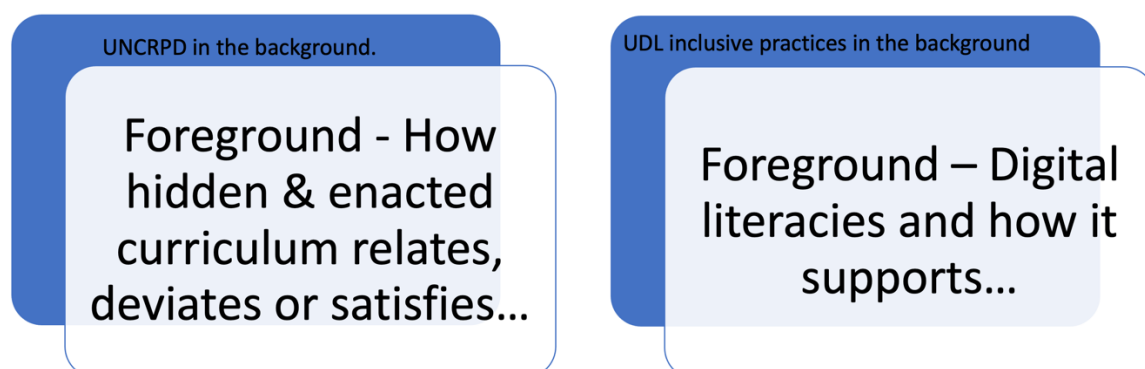
**Research sub-question 2:** What effect does the hidden and enacted curriculum have on students with VI at UCT?

**Research sub-question 3:** How do digital literacies manifest for students with VI at UCT?

In answering the research question and sub-questions above, the theoretical framework shown in figure 2 below will be used to guide the discussion.

*Figure 2: Theoretical Framework with its four components*

### Theoretical Framework



In this chapter, I begin by making the case for a better understanding of the right of students with VI to education and identify how this right is perceived by academics and how it may be influenced by the hidden curriculum. The next sections address the three research sub-questions in light of the theoretical framework in figure 1 above. The chapter then moves to an understanding of the hidden curriculum and its impact on the enacted curriculum. UDL is introduced as a framework to address negative responses to students with VI as a result of the hidden curriculum. This section addresses the second research sub-question of what effect the hidden curriculum and enacted curriculum has for students with VI.

From the findings chapter, the next section highlights challenges when implementing UDL. This addresses the first research question of how far UDL and UNCRPD is considered in teaching and learning at UCT for students with VI. Then the discussion speaks about the effect of retrofitting and its impact on the curriculum and support services for students with VI. This addresses the third research sub question of how digital literacies manifest for students with VI.

The discussion then argues how retrofitting affects and impacts on the curriculum and support services for students with VI. This also addresses the third research sub question of how digital literacies manifest for students with VI. I make the case to move away from a retrofitting operational model to one of accessibility from the start for curriculum development and student support services. This chapter ends by addressing the main research question of what is staff and student understanding on equitable access to the curriculum for students with VI at UCT.

## **6.2 A need for a better understanding of the right to education for students with VI**

People with disability have often been seen as people needing support due to stereotypes that all people with disability are incapable and therefore require charity (Watermeyer, 2012). This charity view depicts persons with disability as passive individuals whose limitations make them less of what an ideal citizen should be, which is an independent person who can make their own decisions (Watermeyer, 2012). Therefore, persons with disability are seen as requiring support to make decisions rather than support to be independent. These constitute two kinds of support. For the first kind through charity, Watermeyer (2012) notes that what



it advocates for may end up in the long run countering what it is trying to achieve which is to support persons with disability to live their lives. This is because living one's life independently stipulates freedom of choice which the charity model seems to be inadvertently opposing because in the long run, the charity model supports continuous dependence through reliance on the good will of men which runs contrary to taking control of one's life (Watermeyer, 2012). Taking control requires freedom and support to decide how to sustain one's livelihood through owning a farm, for example, and growing one's own food to sell to earn an income rather than depending on charity.

The second kind of support is one that seeks the independence of persons with disability because it seeks to recognise persons with disability as equal citizens to non-disabled people if the right support is provided. This support is one advocated by the United Nations Convention on the Rights of Persons with Disabilities article 12 on equal recognition before the law (United Nations [UN], 2006). Independence of persons with disability extends to the way rights are thought about. With rights, such as right to livelihood or housing, independence is engendered. The way rights are thought about also impacts the notion of independence. Western culture often promotes that a person with rights is rational, has individual autonomy and therefore is the ideal citizen (Fyson & Cromby, 2013). Therefore, the rights of persons with disability who are seen as less of a citizen and how they exercise these rights are not understood and thus not mainstreamed. This lack of understanding affects the availability of basic material needs for persons with disability (Fyson & Cromby, 2013). I argue that, due to this lack of understanding, perceptions of disability may then come from whatever unconscious or hidden views a person has in response to disability, to what is so different. Watermeyer (2012) notes that these unconscious ways may then shape how we understand disability and as such this may influence the way academics understand the rights of students with VI.

Therefore, exploring understanding of human rights in academia through looking at the hidden views and perspectives of academics and university management may provide opportunities to clarify where such understanding undermines recommendations of the right to education. With the understanding that the hidden views of academics on disability will impact upon how they see the right of students with VI to education, this chapter moves to

discuss in more detail the effects of the hidden curriculum on the enacted curriculum for students with VI.

### **6.3 Understanding the hidden curriculum effect on the enacted curriculum for students with VI**

This section will answer the second research **sub question**: What effect does the hidden and enacted curriculum have for student with VI at UCT?

The findings chapter revealed that the right to education for students with VI is fragmented through their experience of a partial right which manifests in access to university but not full participation. It also showed that staff members were aware of the right to education for SVI but not aware that this implies recognition of accessible curriculum as also a technical issue. Academics don't see clear guidance on how to proceed to accommodate SVI in curriculum development and pedagogy because, as findings revealed, both curriculum development and support services adopt a retrofitting model where curriculum development and support services look at accessibility only after both have been developed. Therefore, it is not done at the design stage. Findings further revealed lack of awareness that students with VI are currently experiencing partial rights to education, and have access to the curriculum but not full participation within the curriculum. These gaps in awareness also show lack of clarity as regards the translation of the right to education for students with VI. It was also confirmed by Dolmage (2017:165) that academics do not see clear guidance on how to proceed to accommodate students with VI either in the development of the curriculum or pedagogical change. Therefore, they are not aware of the need for meaningful change in almost every aspect of the university but think that the existence of a disability services center to help accommodate students with disabilities is adequate. Having the center is a step in the right direction but it is becoming obvious that more needs to be done if students with VI and other students with disabilities are to be accommodated. Lack of an institutional guide that involves all departments, both academic and non-academic staff, is often lacking. Institutional here refers to a significant practice, relationship or way of functioning of an established organisation or corporation (Merriam-Webster, 2023). Due to this vacuum, academics may resort to finding answers on their own. They may then unconsciously draw from their

personal responses and understanding of disability to fill in the gaps. As Aspler et al. (2018) noted, disability stereotypes are deeply embedded in our society through movies, books, television, and the press which informs responses to disability. This response means academics unconsciously draw from their personal understanding of disability where an institutional guide is lacking. Lack of this guide affects understanding of the rights of students with VI. An academic's personal understanding of disability may not guarantee inclusion of students with VI in education.

The study by Chiwandire (2019) supports this finding that academics who resist inclusion of students with disabilities (including students with VI), do so due to negative biases about students with disabilities. I would add that this resistance may not be explicit at times, but implicit. Therefore, if an academic's exposure to disability or other reactions that they see towards disability either in the media, social gatherings, at work or at home is that of pity rather than possibility, then it is possible that their articulation of the rights of students with disabilities may be rooted in an unconscious response to disability such as the charity model of disability introduced earlier (Chibaya, Govender & Naidoo, 2012).

This model focuses on the deficit view of disability rather than looking at an asset view, the potential of a person with disability. Non-disabled people are seen as benefactors who give support when they can and as such the right of support from the State is restricted. This model contributes to misconceptions that the difference brought by disability is not an expected part of the human experience and as such deserves to be pitied (Timke, 2019; Wymer & Gross, 2021). In the case of academics, this pity may then influence conscious or unconscious understanding of the right of students with VI to education. For instance, as revealed from the findings chapter in section 5.3.2.2, a response to students with VI based on the charity model can be low expectation of the academic competitiveness of students with VI and hence it is okay if they only get to pass at university.

Another unconscious influence to understanding the right to education for students with VI can result from how difference is perceived in various aspects of life. Differences in race and gender but also disability demonstrate the natural diversity of human beings. Difference is part of life but, as Watermeyer (2012) noted, lack of full understanding about why another is

different, or acceptance of why another is different, may influence conscious or unconscious responses to the other. In academia, this can manifest in a diminished valuing of accessible course sites that accommodates difference when only a few students with VI are present as the Findings chapter revealed in section 5.3.1.

Therefore, if a university's response to accommodating students with VI stops at only having a disability centre without academics constantly engaging with knowledge about disability legislation, policies, teaching and learning practices to include students with VI, it is possible that academics may then fill these gaps with their own personal responses or understanding of disability. There are then implications for students with VI's inclusion in the curriculum. I will now examine these implications from a human rights perspective.

A good place to start to understand how the right to education applies to students with VI is the first component of the theoretical framework. The United Nations Convention on the Rights of Persons with Disability (UNCRPD) in Article 24 makes recommendations on how persons with disability can study to their full potential with equal opportunities to those of non-disabled students (UN, 2006). The study on university faculty attitudes and knowledge about learning disabilities by Lipka, Khouri and Schechter-Lerner (2020) noted that academics who had little knowledge about disability legislation were less likely to engage in or explore inclusive practices that would include students with disabilities in the curriculum. Therefore, knowledge of disability legislation makes a difference. From section 5.2.2 of the findings chapter, this study went further to indicate that this knowledge of legislation need to manifest in university accessibility policy that is implemented across university departments.

While legal knowledge is helpful, the question remains of how academics reconcile their unconscious understanding of the right of persons with disability to education to the UNCRPD. Bakri (2019) noted the importance of also considering academic staff rationale and the belief system around accommodation of students with VI. He found that in some cases where academics had knowledge of disability legislation, it did not directly translate to willingness to find ways to include students with VI. This discrepancy indicates that the knowledge of disability legislation is not enough, but that institutional support is required. However, not much literature has looked into the effect of unconscious response to disability and its link to

an understanding of the right of students with VI in higher education. Section 5.3.1.2 of the findings chapter revealed that anxiety to teach students with VI can form unconscious motivations not to engage with accessible curriculum. Therefore, engagement in the alignment of unconscious responses to disability and how that relates to academic understanding of the right to education, and its implementation is important.

Marks (2014) in her book on controversial debates and psychosocial perspectives on disability revealed that non-disabled people may develop unconscious responses to disability due to the stark difference they see in a body that is so different. As such the response may prompt what she called 'defence mechanisms to disabled people' in an effort to not engage with any uncomfortable feeling that seeing a person with disability evokes. For instance, an academic may feel guilty or anxious that the curriculum does not adequately provide for students with VI. But rather than fully engaging to find practices that can help include students with VI, they respond using the unconscious defence mechanism that Marks (2014) termed 'projection'. Projection is an avoidance of unwanted feelings such as anxiety about teaching students with VI (Marks, 2014). Therefore, academics unconsciously project that students with VI come with deficits that prevent them from coping with the rigours of academic study rather than reflecting why they feel guilt or anxiety (Watermeyer, 2012). In this way, effort to accommodate students with VI is driven by this deficit view which may not be the optimum form of support for students with VI, because it may not challenge them enough to be independent. Understanding of the right of students with VI to education through accommodating them may then be seen as a favour rather than as a right as enshrined in the UNCRPD as noted by Chiwandire (2019). These unconscious responses influence an understanding of the right of students with VI to education from the hidden curriculum discussed in the literature review chapter, the second component of the theoretical framework. The hidden curriculum was defined as implicit attitudes, unintended values, behaviour and knowledge communicated without awareness at university (Villanueva et al., 2018).

Sahan, Uyangör and Kervan (2019) indicated a list of hidden curriculum elements of which an academic's behaviour was identified as a hidden curriculum element - behaviours such as what an academic wants students to do and how they want them to go about doing it. My

argument is that this academic behaviour element can also be shaped by unconscious responses to disability as Watermeyer (2012) indicated. This is because engagements with disability and the difference it often represents evokes an unconscious response.

Watermeyer (2012) demonstrated that actions are strongly motivated by the unconscious aspect of human beings. Therefore, an academic responding to students with VI using a charitable view suggests an unconscious response.

The hidden curriculum captures these responses because it operates at the unconscious level (Villanueva et al., 2018). It also consists of values, attitudes, knowledge, and behaviours that are implied but not official (Villanueva et al., 2018). Therefore, interrogating hidden curriculum elements in response to students with VI may prove valuable in support given to academics to align the implicit manifestation of the hidden curriculum with the right to education from the UNCRPD. In fact, Watermeyer (2012) suggested that the more the unconscious response to disability is ignored, the more these shape actions towards disability in unconscious ways.

Therefore, academic hidden anxiety or fear about teaching students with VI as revealed from the Findings chapter in section 5.3.1.1 may be an unconscious response to students with VI. This then manifests explicitly in the enacted curriculum as some staff at UCT do not see the importance of designing the curriculum with accessibility from the start as the findings revealed in section 5.2.2. In this way, unconscious responses to disability influences the hidden curriculum (an academic's views of disability) which then manifests explicitly as a lack of valuing the importance of curriculum design with accessibility from the start, impacting the enacted curriculum. This leads to the perception by students with VI that their right to education is more of an aspiration rather than an experience as shown from the Findings chapter. Sahan, Uyangör & Kervan (2019) note that students process a lot of the hidden curriculum unconsciously which slips into conscious ways the curriculum is viewed and as such becomes a norm. From the findings, the norm that is established in the perception of students with VI is that the curriculum is mainly designed for able bodied students.

Further, this effect of the hidden curriculum on the enacted curriculum increases the expectations that students with VI have to meet in order to satisfy the curriculum requirements. All students have to meet up with curriculum expectations but for students

with VI, because the curriculum has not been designed for their learning needs as the findings indicated, meeting up with academic expectations can be very challenging. For instance, the findings revealed that the ability to read and write is what is valued at university because that is what is associated with being an intelligent student. However, for students with VI, this raises the expectation that if they are not included through accessible ways of reading and writing like braille or screen readers, then they are not students fit for university studies. As such, the explicit expectation is for students to be able to read and write at university but the implicit lack of accommodation of other means of knowledge processing creates challenges for students with VI.

The issue for students with VI is that non-disabled students at university are prepared to be able to meet these implicit expectations because the curriculum accommodates their learning needs. However, this is not the case for students with VI, as reported in this study, if a lecturer has not thought about and provided for the curriculum to be in braille. If addressing curriculum challenges is always from a sighted point of view, and subsequently students with VI are exposed to inaccessible disciplines such as the built environment, then it demonstrates how hidden curriculum values and beliefs negatively affect the enacted curriculum leaving students with VI at a disadvantage (Hodgson and Khumalo, 2015).

The challenges do not stop here. The fourth component of the theoretical framework, digital literacies, draws attention to the importance of the confidence element in teaching and learning (Belshaw, 2014). In order to be able to solve academic challenges, confidence is key. If the implicit expectations are not catered for in teaching and learning implementation, then, as Belshaw (2014) noted, confidence that arises from a student with VI solving their own challenges and managing their own learning suffers. This is due to a mismatch between the expected teaching and learning outcomes and the lack of accessible accommodation of learning means for students with VI. It can be viewed as setting up students with VI for failure at university depending on the level of accessibility in the curriculum. This was reflected in the findings as students with VI noted that they have a right to education, but they actually have to fight for this right to be implemented.

The effect of the hidden curriculum can go as far as influencing academics to shift the blame for an inaccessible curriculum to the impairment of the students with VI, or due to a perceived incapability of students with VI to perform like their non-disabled peers (Chiwandire, 2019). The findings from the staff Q study revealed that there was disagreement that the right to education for students with VI depended on accessible ICT used in teaching and learning. This indicates that staff don't see the importance of accessible ICTs for success of students with VI and thus, if students with VI don't meet their academic goals, there is a tendency to blame this on students with VI impairment limitations (Chiwandire, 2019). As a result of this, findings noted that academics may avoid engaging with curriculum barriers for students with VI and as such would rather refer such challenges to the disability services centre to solve all inaccessible curriculum issues (Chiwandire, 2019). Therefore, the importance of considering the hidden curriculum and making it explicit is needed so that where it does not uphold the right to education, academics are offered support and guidance to correct this (Scott, 2018). The hidden curriculum could thus offer opportunities that were previously unknown to support academics in understanding and implementing UNCRPD better and in so doing to include students with VI fully in the curriculum. Otherwise, as stated earlier, the right to education becomes an aspiration rather than an experience as revealed in the Findings.

My next argument is that a better framework is needed that accommodates different learning needs, supports multiple teaching and learning methods and helps interrogate aspects where the hidden curriculum does not support the right to education. The suggestion therefore is to find ways to make the hidden curriculum explicit in order to support academics in the implementation of the right to education. This implementation is the part of the curriculum called the enacted curriculum, which is part of the second component of the theoretical framework.

#### **6.4 The hidden curriculum expressed in the enacted curriculum through UDL**

From the literature review chapter, the enacted curriculum was framed as the part of the curriculum students engage with every day and is influenced by class size, teaching methods, venues, and availability of resources for both students with VI and lecturers (Luke, Woods & Weir, 2013). It is the implemented teaching and learning practices which often do not fully



accommodate students with disabilities (Bakri, 2019). Fortunately, the findings revealed that there are some implementations of the UNCRPD that are taking place at UCT, but they do not go far enough. The findings show that if current implementation continues as is, then students with VI will continue to experience sub-par education.

The findings indicate that current ways of implementing the right to education requirements for students with VI are not sustainable because current methods do not account for the technical requirements of an accessible curriculum. Retrofits in curriculum development and support service give access but not full participation and discriminates when AT and course websites lack proper testing. Not addressing the reasons just mentioned is why students with VI's experiences of the curriculum vary as findings also revealed and therefore they are fragmented. Current practice is synonymous with a tick box style of meeting curriculum goals. Tick box style has to do with developing curriculum that meets a few needs of students with VI such as meeting access needs but leaves out other important needs such as gaining full participation in the curriculum. I argue that a better understanding of the impact of the hidden curriculum on the enacted curriculum can further the right to education for students with VI. It provides a chance of moving beyond tick box accommodation of students with VI. Therefore, a strategy to support academics in the explicit harmonisation and cohesion of the hidden curriculum with the enacted curriculum is required. The findings indicated that a proactive approach is needed to move from the point of just access to full participation for students with VI in the curriculum.

Such a strategy should help to dispel concerns about how to include students with VI who learn very differently. It should change from a deficit view of students with VI to an asset view and encourage students with VI of future prospects when they graduate. A workable strategy would instil confidence both in the academic's ability to include students with VI and a belief in students with VI in their ability to succeed in higher education. The universal design for learning (UDL) framework, which is the third component of the theoretical framework, may be able to help.

Findings revealed that not only do students need multiple skills in the use of technology within the curriculum, something which is essential today, but that this engagement also needs to

be considered because learning occurs within the workplace, home, university and social contexts as well. I noted in the Literature Review chapter that access to learning in these contexts for students with VI needs to be looked into because, as Furlong and Davis (2012) reported, the boundaries of learning have blurred in such a way that learning no longer happens in the university context alone. When you add the effects of the hidden curriculum, the complexities associated with learning for students with VI begin to emerge. For instance, a perception that students with VI lack the ability to succeed at university rather than working on accessibility of the curriculum is a manifestation of the hidden curriculum. AT, such as a screen reader, may be offered while students with VI are at university; however, the course site that the AT needs to access may not be accessible, introducing more challenges. Further, AT provision may have been considered only when students with VI are physically at university but not while learning from home, at work or in social contexts. Therefore, a framework that can handle diverse ways of learning is necessary.

UDL is a unique framework for accessible teaching and learning because from the design stage of the curriculum UDL has the potential to encourage the exploration and interrogation of preconceptions about disability discussed earlier. It focuses on strengths and abilities rather than deficits or weaknesses and supports a move away from the deficit view of disability with UDL's asset pedagogical nature of curriculum flexibility in multiple ways to present information to students, multiple ways of engaging students and multiple ways for students to express what they know (McKenzie & Karisa, 2021; Waitoller & King, 2016; Bakri, 2019). As an asset pedagogy, it sees opportunity in different learning needs rather than deficits. In fact, Burgstahler (2021) noted that through provision for diverse learning means academics can anticipate multiple ways to effectively convey information to a wider array of students including students with VI. This actually means academics may become more effective teachers who are able to understand students' diverse needs. This increases the possibility of reaching the goal of the right to education (UN, 2006). A note is that UDL targets all students, therefore it will not only benefit students with VI (McKenzie & Karisa, 2021).

In practice, UDL advocates for three principles as stated in the literature review chapter. The first principle, multiple means of representation, indicates that information or what students are to learn, can be presented to them in multiple ways. There is not just one way for all

students and, as such, each student will pick the optimal method that fits their learning means (Coffman & Draper, 2022). This first UDL principle has the potential to challenge the negative effect of the hidden curriculum because effective methods of presenting information to students with VI demonstrate that they receive information on par with their non-disabled peers and this, in turn, suggests that the negative preconceived views about students with VI do not hold when accessible teaching and learning methods are used. It demonstrates that with accessible teaching and learning practices, students with VI can perform just as well as their non-disabled counterparts. Therefore, curriculum accessibility efforts influenced by a charitable view or with a sense of pity will be challenged. Academics would start to perceive that students with VI don't need charity, but rather enthusiastic academics who are willing to be creative to accommodate difference. Academic skills on how to present information in multiple ways will however need to be workshopped to academics because findings indicated that they lack this skill.

The second principle is multiple means of engagement. This principle recommends multiple ways to spark the interest of students with VI. If successful, the students with VI may become self-motivated, in control of their own learning and reaching their academic goals as asserted by Chiwandire (2019). This second principle also has the potential to dispel the hidden preconception that students with VI are less capable than their non-disabled counterparts because, being engaged, they are just as likely to meet their academic goals as any other student. Findings indicated that provision for multiple means of engagement, access to skills to engage and access to opportunities to engage in different contexts such as home, school or work contexts have not been considered for students with VI. Here as well training to equip academics how to do this would be required.

The last principle is multiple means of action and expression. This principle speaks to allow multiple ways for students to demonstrate mastery of what they have learnt from the course (McKenzie & Karisa, 2021). This multiple means of action and expression then has the potential to dispel deficit views that students with VI will always be at a disadvantage because of their impairment and as such should be comfortable with just passing a course rather than being the best student as the findings revealed. With the ability to express mastery of the subject matter at university in a form with which students with VI are comfortable, their

knowledge of the subject matter is more accurately reflected than when using a single way only, such as exams or assignments (Al-Azawei, Serenelli & Karsten, 2016). Students with VI become strategic and goal directed as noted by the Centre for Applied Special Technology (2018). Students with VI success may then challenge the deficit view. This change from deficit to asset view may gradually lead academics to the celebration of difference. Difference is demonstrated in race, gender, and class and UDL supports accommodating these differences.

The above discussion highlights how implicit values, attitudes, and preconceptions of the hidden curriculum can influence implementation of the enacted curriculum. This implementation does not support the right to education for students with VI, but with UDL academics may be supported to interrogate this hidden part of the curriculum to promote teaching and learning that supports students with VI. However, one should not stop there as Scott (2018) noted that even in the implementation of UDL, there is an equal need for the interrogation of the beliefs and attitudes of academics to identify where support is needed so implementation satisfies the right to education.

The above discussion has answered the second research sub question regarding the effect the hidden and enacted curriculum have on students with VI. However, challenges to the implementation of UDL by those who have started working with this framework need to be highlighted which the next section will cover. This next section will also answer the first research sub question which is to what extent has the effect of the UNCRPD and UDL been considered in teaching and learning at UCT for students with VI.

### **6.5 Accessible curriculum is also technical issue**

From the findings chapter I noted that accessible curriculum is also a technical issue that is not prioritised. Although UDL comes with great potential for students with VI, there are challenges to be aware of in support of UDL implementation. Challenges as noted from section 5.2.1 were those related to time and competing demands of research and promotion which affects UDL implementation.

### **6.5.1 There is no time to include UDL in the curriculum**

The first challenge in the operationalisation of UDL as revealed from the Findings chapter is the issue of availability of time for the implementation of UDL in the curriculum at UCT and other universities. Academics claimed that usually time needed for accessible curriculum training is time they don't have due to their academic workload. Academics also stated that due to the COVID-19 pandemic, they have had to focus a lot more on psychosocial support to students who went through mental health challenges.

The issue of availability of time is a legitimate one as evidenced from the findings, but I argue further that there are other factors that exacerbate this issue of lack of time for academics. To understand this, it is necessary to speak about how academics are trained in teaching and learning. Academics have been used to a particular teaching and learning strategy, a traditional way of teaching which is lecturer centred as explained by Ganyaupfu (2013). Not only is it lecturer centred, but teaching and learning mostly also follow a linear pathway, similar to a staircase model noted in the literature, where learning is only a set of stairs for all students that must be taken, one rung after another (Belshaw, 2014; Ganyaupfu, 2013). This strategy has been the traditional way of teaching and learning for a long time. The underlying paradigm informing this approach was that the teacher was the primary source of information. Therefore, the lack of time for accessible curriculum teaching indicates that some factor has changed to put more pressure on the academics' time. This change is the kind of students who now gain access to university. They are more diverse, coming with diverse learning means.

As education progressed and matured from the teacher being the sole source of knowledge to students also coming with knowledge, it became clear that the traditional way of learning could no longer fit the different kind of university students (Yazici, 2017). This paradigm of the teacher as the sole source of information served its purpose in earlier times for teaching and learning. However, transitioning from that paradigm to accommodating students who learn differently poses significant challenges. As Baucum-Manross (2016) noted, transitioning to a new way of teaching, would have required academics to teach beyond the way they were traditionally taught. They would have had to manage students who learn autonomously and

who learn at difference paces. They also would have had to create different teaching and learning materials for students who are self-directed with context and non-context specific underpinnings. Information will also have had to cater to both linear and non-linear ways. This would have also presented challenges when academics also had to deal with other factors such as class size and number of courses they teach. Therefore, academics have been less prepared for non-linear teaching and learning.

As such, with the introduction of UDL and its principles of multiple ways of representation, action and expression, and engagement which promote non-linear learning, academics may feel that there isn't enough time in the curriculum to engage with new teaching and learning practices (Alquraini & Rao, 2020). Hence the challenge of finding time in the current teaching and learning practice to implement accessible methods such as UDL arises. With lack of institutional support, there is limited institutional exploration of UDL practices. As one lecturer at UCT noted, academics are aware of the need for an accessible curriculum. They want to do it, but they have not been prepared to support academic needs of students during a student crisis at university. With the arrival of COVID-19 pandemic, academics realised that the traditional way of teaching needs to factor in an accessible curriculum, especially for students with VI. Therefore, in answering the first research question, UDL and UNCRPD at UCT seem to have been considered, but the workload academics have just doesn't give them enough time to engage in it.

The next barrier to be aware of which is linked to lack of time is other competing demands with the implementation of UDL.

### **6.5.2 UDL is not a priority due to competing demands**

The COVID-19 pandemic prompted a move into full online teaching and learning. While online provisions had the advantage of keeping the academic project going, they also revealed that UCT, like other universities in the world, was not ready for full online learning challenges. It showed that provision had not been made for students who learn differently, such as students with VI. Further to this, it revealed that inclusive teaching and learning at UCT has been a challenge because teaching dominates at university but gets a lower priority in terms of

promotion. The findings also revealed that academics' perception was that if you want to be promoted, you have to follow university guidelines which often don't include accessible curriculum accommodations. Therefore, if an academic wants to engage in accessible curriculum development, they have to go it on their own and may not get rewarded for their efforts. Time required for research as one participant indicated is also prioritised over time for accessible curriculum because research gets you promoted. Therefore, the workload brought about by the need for research and promotion leaves little time for an accessible curriculum which was similar to what Mutisya and Makokha (2016) found in their research into challenges affecting adoption of eLearning in public universities.

UCT has recognised this lack of institutional guidance to accessible curriculum and has started to address this challenge (Dalton, McKenzie & Kahonde, 2012; Ferguson et al., 2019). Workshops, training, and the pilot of blended online courses focused on the implementation of UDL at UCT with a focus on how to meet the wider needs of students and support for academics to make their curriculum accessible is encouraging and it is hoped this will offer academics the much-needed institutional support (Dalton, McKenzie & Kahonde, 2012; McKenzie & Karisa, 2021). This institutional support indicates that, in answering the first research question of how UDL and UNCRPD is considered at UCT for students with VI, it used to be at an individual academic level, but with the current effort being implemented, it seems the institutional support would be evident in the not-too-distant future. From the above discussion, it appears that the individual effort at UDL implementation exists, but the emerging institutional support mentioned from the findings revealed that monitoring mechanisms have not been put in place to measure implementation. The next challenge speaks to institutional support but with consideration for monitoring mechanisms of UDL.

## **6.6 Institutional support for UDL at UCT needs monitoring mechanisms**

The Findings chapter revealed that UCT's vision 2030 goal of visible and accessible teaching and learning may not be achieved for students with disabilities if monitoring mechanisms and incentives for lecturers are not put in place (UCT, 2021). UCT's vision 2030 is a working document that aims to shape and lead where the university hopes to be by 2030. The document speaks to establishing an inclusive and transformative leadership through "unleash(ing) human potential for a fair and just society" (UCT, 2021:7). The document

recommends doing this through innovative, inclusive and responsive teaching and learning, and research and ICTs among its students and staff which include students with VI. It is still taking input from the university community. It was not clear from the document how an inclusive curriculum would be monitored. Further, the monitoring mechanism was also missing in the curriculum development policy of UCT 'Centre for Higher Education Development (CHED) strategic plan draft' (CHED, 2022). These are plans that speak of accessible curriculum but don't seem to indicate how implementation will be monitored.

Literature which speaks to such monitoring mechanisms for UDL implementation so far is scarce with studies speaking of the implementation of UDL, but not how it would be monitored. For example, Scott's (2018) study on barriers to implementation of UDL speaks of the need for training of staff on UDL. Britt et al.'s (2019) article on inclusion, universal design and universal design for learning in higher education in South African and the United States advocates for the inclusion of UDL in curricula. Scott et al. (2017) on implementation of UDL looking at current preparation practices recommends ways to go about the inclusion. However, none of these studies mention ways used to monitor it or if they monitored implementation success or failure. Therefore, UCT would need to establish ways to monitor implementation because the Findings chapter indicated that UCT's key staff performance areas do not monitor accessible curriculum implementation.

The studies mentioned earlier recommend operationalising UDL through the introduction of UDL as a concept for curriculum accessibility but with an understanding that this is from the design stage of curriculum development (Scott, 2018). Scott (2018) and Jiménez & Britt et al. (2019) recommend that pre-service training for higher education should be done with UDL before teaching staff start teaching and learning. There should also be in-service or professional development follow up training in UDL that helps to share best practice with collaboration across programmes to show why UDL is a viable framework to build upon (Scott, 2018; Jiménez, Britt et al., 2019).

The above spoke to how far UCT considers UDL and UNCRPD in teaching and learning for students with VI through discussion on the challenges. However, this discussion focuses on three ways to mitigate the barriers mentioned. Firstly, designing with UDL principles from the beginning has the potential to help address the lack of time to include UDL in curriculum because, as McKenzie and Karisa (2021) note, there will be an initial investment of time at the



design stage, but in the long run, time, energy, and resources will be saved. Secondly, to mitigate the challenge of lack of institutional support, the suggestion is made for training for academics on UDL importance and implementation. Monitoring and reward mechanisms are proposed as ways to encourage academics and also to demonstrate institutional support. Finally, mitigating the challenge of balancing research and promotion with implementing UDL will be covered in the next section. This study found that UCT and universities have to relook their operational model with respect to teaching and learning. Technology plays an increasing important role and as such this next section will speak to the third research sub question of how digital literacies manifests for students with VI at UCT.

### **6.7 Institutional leadership lacks recognition of the value of accessibility design from the start**

Findings from this study showed a culture of retrofitting occurring at UCT both at the curriculum level and at the university support services (ICTs such as LMSs) level. Retrofitting in the curriculum is similar to retrofitting done in the built environment by adding ramps to buildings after they have already been completed to accommodate persons on wheelchairs (Dolmage, 2017). The same is done in the curriculum where effort to accommodate students with VI is sought after the curriculum has been designed and taught to students. Retrofitting in the curriculum adds solutions after the curriculum challenges are identified rather than planning for them from the start (Marks, Woolcott & Markopoulos, 2021). This retrofitting model has had negative consequences for students with VI because it is usually employed after students with VI are seen to not be faring well academically (Marks, Woolcott & Markopoulos, 2021). This model implies that if a student with VI comes to university to study, accessibility of course sites, for instance, may be considered either during the course or after the student has finished the course. It means the students with VI has not been given opportunity through inclusive teaching and learning methods that UDL offers to perform at their optimum best and demonstrate mastery of the course outcomes.

From the findings, curriculum retrofitting occurred as participants noted that accessible curriculum is done mostly on an individual level. This accessibility on individual level means challenges to learning for students with VI is dealt with as they arise which was noted as a

pragmatic approach because the challenge is right there in front of the academic. Therefore, with lack of systemic change, challenges are sort of patched as they occur.

At the support services level, findings also showed that support services are first developed and only afterwards is accessibility considered. For instance, the findings mentioned the student management system (PeopleSoft) and that specific system components would have to be revisited to check that they adhere to accessibility standards. This systems development strategy departs from design with accessibility from the start and as such demonstrates the value of consideration for different learning means during curriculum development and support services provision. This kind of value is one that will always struggle to include all students, especially students with VI. Therefore, a need to relook the operational model in curriculum and support services development at UCT and other universities is necessary - one that looks at design with accessibility from the start for both.

The operational model of today's university is one mixed with public interest value, market forces interest and commercial interests as noted by Winter and O'Donohue (2012), Gibb, Haskins and Robertson (2013) and UCT's vision 2030 goals (UCT, 2021). With reduced government funding, today's universities are forced to find alternative sources of funding. This reduced funding has placed most universities between two powerful extremes, that of maintaining traditional academic values largely centred on serving the public interest and public good and the need for financial survival and, as such, a need to respond to the market culture (Winter & O'Donohue, 2012; Gibb, Haskins & Robertson, 2013). Winter and O'Donohue (2012) note that the vision statements of universities often sound like the vision statements of corporations where profit is the prized goal, crucial for the survival of any private or public institution. But, as they further noted, it may come at the cost of losing a traditional focus universities had towards the society that is more sensitive to marginalised sections of that society.

Universities responding to market forces may have the result of diminishing focus towards any section of the society that is deemed to not strongly contribute to profit making, in which persons with disability are often included (Zornes, 2012). This diminished focus has shaped a reduced interest to invest in teaching and learning methods that can bring full inclusion in the

curriculum for students with VI (Zornes, 2012). The diminished focus occurs because the university is seen more as an institution for profit making rather than one where co-creation and interchange of knowledge remains core business (Zornes, 2012). Business practices of corporations are increasingly adopted such as the centralisation of control to top management rather than exchange of ideas via debate and knowledge exchange (Zornes, 2012). As a result, universities focus less on the public good, adopting a retrofitting model in teaching and learning (Braat, 2021; Marks, Woolcott & Markopoulos, 2021). Therefore, the current value placed on retrofitting needs to change to one of design with accessibility from the start in curriculum development and delivery. This change also needs to occur with regards to making ICTs accessible and the digital literacies that enable them for students with VI. The next section speaks to this.

### **6.7.1 Digital literacies, ICTs in relation to the retrofitting model**

Further, the last component of the theoretical framework is digital literacies due to increasing use of technology in teaching and learning. These digital literacies aid the experiencing of the enacted curriculum for students with VI but may not have been explored due to this retrofitting model. Therefore, multiple barriers at various levels confront students with VI resulting in denied opportunities to access digital literacies which the literature review refers to as involving information literacy, computer literacy, media literacy and visual literacy (Ng, 2012). In addition, literature refers to the eight elements of digital literacies for students to acquire to adequately navigate the university today. They are confidence, cultural, cognitive, constructive, creativity, critical, civic and communication elements. They don't need to be in any particular order but are all important (Belshaw, 2014). The first element I want to discuss is the confidence element which is required to be able to navigate the different literacies just mentioned for students with VI. Confidence grows when the context of a student's learning means has been considered in the curriculum, and therefore the cultural element becomes important. The cultural element refers to considering issues, norms, and habits where teaching and learning are happening. There is a link to the hidden curriculum discussed earlier because unconscious responses to disability often manifest via issues, norms, and habits (Belshaw, 2014; Villanueva et al., 2018).

As stated earlier in this chapter, learning happens in a progressive non-linear manner, rather than a step-by-step process. This self-directed learning path requires students to immerse themselves in different digital environments that facilitate exploration and trial and error, and that enrich the academic experience, all features of the cognitive element (Belshaw, 2014). This self-directed learning path requires ability to use familiar and unfamiliar devices, learning management systems (LMS) and interfaces. An example of an interface is where a screen reader meets a course site. The interface has not been considered for students with VI because often testing is not done for these devices, LMSs and interfaces (Solovieva & Brock, 2014; Akgül 2018; Erickson et al., 2013). Thus, opportunities for students with VI to expand their mind in learning are limited and as the Findings chapter also indicated, becomes a form of discrimination (Solovieva & Brock, 2014; Akgül 2018; Erickson et al., 2013). Understanding this lack of opportunities is important because as the constructive element notes, students with VI will find it challenging to co-create knowledge that builds social cohesion for reinforcing a sense of belonging to university and society (Belshaw, 2014).

However, if the constructive element is considered students with VI would experience more freedom, can follow self-directed learning pathways with confidence and as such unleash their human potential. Creativity is another of the digital literacies elements, and it allows students with VI to create things of value that contribute to the body of knowledge (Belshaw, 2014). Therefore, students with VI move from just passing at university to being the best students, participating in knowledge co-creation, thus enhancing their experience of the curriculum (Suarez-Balcazar, 2020).

The next element, the critical element, would support academics to reflect on their teaching and learning practice and what skills led them to it (Belshaw, 2014). Are these skills inclusive? Are these skills still in the linear step-by-step way of teaching and learning? Academics would be able to interrogate where their current practice excludes students with VI and then look to the UDL framework for inclusive strategies. In a way as noted earlier the Findings chapter indicates that academics are already aware of the need for inclusive teaching and learning practices and therefore are beginning to be critical.

At the end, the civic element of digital literacies is about the bigger picture which is aligned with the right to education from the UNCRPD. Do students with VI fully participate in the curriculum and as such contribute to civil society like every other person? This is to make sure that the end goal is not lost which is that an accessible curriculum which promotes non-linear learning pathways for students with VI gets them to the end goal, contributing positively to civil society as full members of that society.

The last element, the communication element, cuts across all the other elements and is an enabler of the other elements because none of the elements can be considered without communication (Belshaw, 2014). The impact of this element and lack of its consideration was evident during the COVID-19 period. This element is tightly linked with mediums used for communication such as Microsoft Teams and Zoom web conferencing tools which were adopted widely due to the COVID-19 pandemic. However, students with VI struggled to use them because these tools were adopted without testing for students with VI from the start. The implicit message students with VI got was that they have not been thought of in the new COVID-19 online teaching paradigm (Madhesh, 2021). This non-verbal attitude which is part of the hidden curriculum is processed by students with VI. As Sahan, Uyangör and Kervan (2019) notes, over time, these hidden barriers slip into real conscious reflection and become a norm that students with VI abide by. They get the impression that the curriculum does not speak to their learning means and, as such, will influence their university quality of life perception. As noted by Özdemir (2018), a student's university quality of life perception is their expectations such as successfully graduating from university, pride in having taken advantage of all that university has to offer and leaving university with the certainty of being equipped to contribute positively to society.

When the perception of university quality of life decreases, students with VI sense of belonging also decreases. The communication element is, I would argue, the backbone on which the students with VI academic experience hinges because it is not only the one element that pervades all the other elements, but often determines access to the curriculum. Therefore, awareness of and looking into these eight elements would highlight areas where students with VI struggle in today's curriculum, then look to UDL practices that can mitigate the challenges whether from the hidden curriculum or the enacted curriculum and then use

the right to education from the UNCRPD to make sure the right to education for students with VI is always upheld. Overall, the findings chapter revealed that accessibility of the enacted curriculum for students with VI has not been thought through given the complexity which this discussion is revealing.

The retrofitting model adopted by universities is also evident in the ICT support services that are offered. ICT implementation is first done but not with accessibility in mind. Findings also revealed that UCT is still in the process of working out how the student management system and a screen reader work together which indicates lack of accessibility in mind from the time of design of the system. Therefore, it may be time for support staff in the ICT department at UCT to look at what needs to be done to think of design and consider accessibility from the start when making a purchase for ICT software, equipment, and services (Raja, 2016; Burgstahler, 2021). This is important because findings also indicated that ICTs hold the assumptions of their creators, buyers, and users. Where ICT support services lack accessibility, this may either reflect assumptions or lack of awareness of their designers (Raja, 2016). Therefore, a relook at the current operational model that follows a retrofitting strategy to that of designing ICT with accessibility in mind from the start as well as teaching and learning from the beginning using UDL is needed. This shift has the potential not only to meet the needs of students with VI but also those of all other students. For example, it will also meet the needs of students whose first language is not English (Burgstahler, 2021). By captioning videos for hearing impaired students, second English language students are also included as they may be able to watch the videos in their own language (Burgstahler, 2021).

Findings also revealed that accessible curriculum work is mostly pushed to the disability services department of a university rather than being taken up by all departments at the institution. A contributing factor is disability services sometimes not cooperating with academics (Bakri, 2019). Chiwandire (2019) noted a similar trend and further advocated for a decentralised approach where academics are skilled in UDL. A decentralised approach has to do with spreading the responsibility of catering for students with disability beyond the disability services department to the whole university (Mole, 2013).

This decentralised approach through different departments taking some responsibility for accessible curriculum needs to be institutionally driven through policy, implementation, and monitoring mechanisms (Burgstahler, 2021). There also seems to be a contention between individual support to students with VI and institutional support. Should the support be centralised, or should it be individualised? Centralised support is when accessible curriculum needs are mainly left to the disability services unit or department of the university while individual support means supporting each student with VI when they individually indicate a need (Merriam-Webster, 2023). Currently at UCT and at a number of other universities, as also noted by Smith, Woodhead, and Chin-Newman (2021), the individual approach is more common due to lack of training of academics in inclusive practices.

I argue that there can be room for both approaches, an institutional or centralised approach and an individual or decentralised approach, just as noted in the Findings chapter. Bakri's (2019) study showed divided opinions over which should be the approach to follow. This study found, however, that institutional approach will provide the resources and training needed for an inclusive university while an individual approach reminds UCT and other universities that there is no one size fits all and address individual access supports like attendant care or interpreting services.

The discussions above reveal the complexity of studying at a university for students with VI and also answer the third research sub-question of how digital literacies manifest for students with VI at UCT. It demonstrates the importance of access to digital literacies and that access to them for students with VI have not been explored. Consideration for the eight digital literacies elements mentioned by Belshaw (2014) will equip students with VI to take a pathway that gives them supportive educational experience but also more self-directed learning.

The final section in this discussion answers the main research question which is how students and staff at UCT understand equitable access to the curriculum for students with VI. It starts by drawing from the discourse of what equitable access is as stated from the literature review chapter and then highlights how the discussion points reflect the understanding of staff and students about equitable access to the curriculum for students with VI.

## **6.8 What is the staff and student position on equitable access to the curriculum at UCT for students with VI?**

All students should have access to higher education but with a diversity of students from different socio-economic backgrounds, race, gender, ability, and nationality, what constitutes a fair access is not always clear (McCowan, 2016). It is now considered that access to higher education cannot be thought about without mechanisms put in place for success and retention of students (Essack, 2012). But who is not gaining access to higher education and who is not completing their degrees and why? Studies from McCowan (2016) and Essack (2012) among others highlight (as discussed in the theoretical review chapter) that students who fall outside the 'ideal student' largely fall within those not gaining access and those not completing their degrees. These include students with VI. Therefore, to understand factors that affect different student access and success in higher education, equitable access presents a more nuanced way that is more flexible to support identification of the factors and addressing them. Essack (2012) and McCowan (2016) note that equitable access is about equality of opportunity which means each student is given an equal chance of access and success in higher education. Equity then requires an assessment of each student's learning means to find ways that are optimum for the student's learning experience and provide the necessary support.

Participants of this study have reported that when considering students with VI, access and success at university are even more complex. It is more complex because students with disabilities who form part of a diverse student body are poorly understood in terms of their learning means. Participants have highlighted that this lack of understanding of a student with VI's learning means should start with an understanding of their right to education. The law as regards the right to education has been laid out in the Universal Declaration of Human Rights [UDHR] (1948) and specifically for persons with disability in the UNCRPD (UN, 2006) noted earlier in this chapter. However, the findings of this study have revealed that equitable access to the curriculum for students with VI has not been paid sufficient attention. Findings indicated that where an institutional response to equitable access is lacking, academics are left to their own understanding of disability and in trying to do their best, may not be offering the optimum educational experience each student with VI needs as required by the



conventions. In this line, the hidden components of the curriculum may impact on success or failure of a student with VI and as such mechanisms are needed to make these explicit so that adequate support can be provided to academics.

Staff and students understand that equitable access to the curriculum for students with VI, although complex, provides ways to mitigate the challenges. They indicate that UCT first of all needs to reconsider their operational model in content, teaching and learning, assessment, and support in relation to students with VI. UCT needs to transition from a retrofitting strategy to an operational model that designs the curriculum and supports services with accessibility from the start. In doing this, UDL is a flexible framework that can support academics to manage time for accessible curriculum, time for research and time for promotion. UDL also helps support changing negative unconscious responses to students with VI that influences understanding of their right to education. UDL helps demonstrate that with the right adaptation of the curriculum, students with VI are just as well able to succeed as other students. Therefore, they have a right to education with the appropriate support.

Staff and students further understand that if the hidden curriculum is not made explicit, this jeopardises digital literacy skills students with VI need to succeed at university such as the eight elements mentioned in section 6.7.1 of this discussion. This indicates why students with VI may find it difficult to succeed at university.

Finally, equitable access for students with VI requires the working of all departments at the university guided by an institutional policy that is informed by UDL practices with consideration to opportunities to acquire the eight elements of digital literacies. This institutional policy must be monitored in academic key performance areas but with ongoing training and support for academics. Then, the right to education as enshrined in the UNCRPD for students with VI will move closer to being achieved.

## **Chapter 7 - Conclusions and Recommendations**

### **7.1 Introduction**

In this chapter, I start with reasons why this research was conducted. Then I cover the conclusions, limitations of the study and recommendations for future research that can be undertaken. I also cover the implications of this study to UCT's Vision 2030 goals and how pertinent parts of Vision 2030 can benefit from the findings of this study. I then conclude with reason for undertaking the research and the end goal of the study.

### **7.2 Conclusions**

As a lecturer for more than a decade at UCT, I have witnessed how the curriculum and support services exclude students with disabilities, especially students with VI. This is sometimes unconsciously done. I have also witnessed the commitment of academics at UCT to want to engage more in an accessible curriculum as Ohajunwa's (2012) study revealed that even with lack of institutional support, academics were doing it on their own to try and include students with disabilities and this was across six departments at UCT. Also, my master's study (Nwanze, 2016) revealed the passion academics had to include disability issues but lacked the institutional support.

This study was borne of my anxiety that UCT's Vision 2030 will end up, despite its good intentions, excluding students with VI if better understanding of what leads to equitable access to the curriculum for students with VI is not investigated. Therefore, this study had to look beyond current teaching and learning practices to find out the different ways people thought about equitable access to the curriculum for students with VI at UCT. It has revealed that it is a complex topic, but which can be understood with deeper insight. This study offers this insight by revealing areas that need to be the focus of UCT going forward so that the realisation of its Vision 2030 goals includes students with VI. The study also revealed a need for all UCT's departments as well as for other universities to work closer together to be able to handle the complexity of equitable access to the curriculum for students with VI.

This study further revealed that the recommendations made further below are not only for students with VI but for all students making it worthwhile to implement these recommendations as it will be money, time and resources well spent. The experiences of UCT can also be applied in other institutions of higher learning in South Africa and indeed globally.

UCT's Vision 2030 will then truly unleash all human potential, not just some human potential, making the society fairer and just for all, including students with VI. Students with VI will then not be left to a sub-par education but truly reach their potential (UCT, 2021). With the implementation of the recommendations of this study, the right to education as embodied in the UNCRPD and ratified by South Africa moves closer to being realised for students with VI.

### **7.3 Limitations of the study**

While this study yielded insights into equitable access to the curriculum for students with VI, it does have some limitations which I detail below:

1. Due to COVID-19, the Q sorting process was done online for all participants. This was adequate for non-disabled participants but for students with VI this introduced some limitations. From their feedback about how they found the research process, they indicated that they would have preferred it to be in a physical venue with some way to represent the statements in a tactile way such as with cardboard. They also indicated that being in the same physical venue would have allowed them to keep the position of the statements in their heads better, which allows for deeper level of engagement. Therefore, this may have affected the level of engagement for students with VI and as such an area to improve upon for similar studies in future. On the other hand, the fact that I completed the study with them, also gave me rich insights into their thinking.
2. Students with VI mentioned that they would have liked to have the statements beforehand so that they could familiarise themselves with the questions. This may have affected the level of engagement and as such is an area to consider for future research. When sending the statements in advance, detailed information about how it would be used would need to be included so students with VI were clear as to the purpose.

3. A last limitation is due to participants of this study all coming from UCT, so the findings of this study cannot be generalised. However, with the detailed description of the content and methodology, other researchers can apply the findings of this study according to their own contexts. A study looking into equitable access to the curriculum for students with VI with participants from more than one university may uncover a wider range of implications and complexity in higher education.

#### **7.4 Implications for practice at UCT**

The results and recommendations of this study have implications for UCT and other universities in the way they conduct their teaching and learning practices, their support services and policy formation and implementation. The implications for UCT however, will focus on how this study contributes to the institutions Vision 2030 goals because time, resources and money are being invested into the realisation of the vision.

UCT vision 2030 goals acknowledge that the current model of operations at the university would not suffice to respond to the new generation of students coming through its doors (UCT, 2021). UCT Vision 2030 also recognises the potential of all its students, hence the main theme of Vision 2030 is to “*unleash human potential for a fair and just society*” (UCT, 2021:2). To achieve this, Vision 2030 enumerates areas to focus on to which the result of this study contributes. They are the following:

- To achieve Vision 2030, the training of academics and introduction of transformative pedagogies with support for academics and students is mentioned as a goal (UCT, 2021). Recommendations from this study will aid UCT to achieve this vision. Training workshops in UDL will equip academics to be responsive to the diversity of UCT’s students, including students with VI, because it will provide multiple means to accommodate students’ diverse learning methods, recalling from the Discussion chapter that UDL is not just for students with VI but for all students.
- With monitoring mechanisms for UDL implementation, UCT can then measure the rate of success on how well the diversity of its students are accommodated and supported. Including accessible curriculum in academic key performance areas will then aid the university to monitor progress and identify areas of further support to academics.

- Vision 2030 speaks about introducing critical policies that support equity that transforms the institutional culture (UCT, 2021). Recommendations from this study contribute to this with policy that change the retrofitting operational model of the institution into design from the start with accessibility. This means academics will have institutional support to design with accessibility from the start. It also means academics can better anticipate the diversity of learning means of its students, especially students with VI. Academics can be more confident about teaching students with VI, and thus reducing the anxiety reported from the Findings chapter.
- Vision 2030 understands the critical role played by ICTs in teaching and learning both for students and academics. As such, it commits to providing the latest technologies with the requisite knowledge and skills needed to effectively use them and contribute to civil society (UCT, 2021). Vision 2030 also noted the inequality that going fully online due to COVID-19 had on some students who were excluded either due to inaccessibility of ICTs, or poor socio-economic circumstances (UCT, 2021). This study recommended operationalising support services by thinking of accessibility from the start. When designing ICTs, purchasing ICTs and implementing ICTs, having accessibility in mind will ensure that students with VI and other students have ICTs that are adapted to their learning means. This implies that where and when UCT's course goes fully online, the inequality noticed during COVID-19 can be mitigated. Also, with UDL's multiple means of representation, action and expression, and engagement, UCT can be more responsive to students with VI learning means because they will then be able to explore which ICT works best for them.
- Finally, Vision 2030 realises that student experience of UCT is a function of the kind of learning environment that is provided, one that allows students to engage and express their agency (UCT, 2021). Consideration for the eight elements of digital literacies recommended by this study will equip UCT students with VI and other students to work out barriers to learning whether learning at university or in home, work, or social contexts. This will enhance the learning experience for students, especially students with VI, and UDL principles will help identify effective connections to these contexts, thereby optimising students with VI engagement in the curriculum (McKenzie & Karisa, 2021).

## **7.5 Recommendations**

From the literature review chapter, equitable access is synonymous with equality of opportunity which in application refers to having the same access to equal opportunities within the curriculum to succeed in higher education despite having different learning means (McCowan, 2016). The question is then what are the areas to focus on for a student with different learning means such as students with VI so that they have equal access to the same opportunities in the curriculum as other students? The recommendations below indicate the areas to focus on.

### **7.5.1 Study recommendations to UCT and other Universities**

Areas to focus on so that students with VI at UCT and other universities gain equitable access to the curriculum are the following:

1. UCT and other higher education institutions should begin with support for academics in the clarification of their response to disability. Sahan, Uyangör and Kervan (2019) identified an academic's behaviour as one of the hidden curriculum elements while Watermeyer (2012) concluded that a person's behaviour is influenced by unconscious motivations. Therefore, unwillingness, resistance, anxiety, or hesitancy to engage in the development of an accessible curriculum can be due to conscious or unconscious responses to disability (Watermeyer, 2012). These responses raise concerns of a lack of awareness around inclusion of students with VI. An academic may not be aware of this and therefore UCT and other higher education institutions can help facilitate a frank discussion around this area. It is worth noting that the unwillingness may also be due to anxiety that accommodating students with VI lowers academic standards (Nieminen, 2022).

UDL workshops that empower academics with planning foresight where they can anticipate the different learning means of their students including students with VI can then be introduced (Hewett et al., 2017). Chiwandire (2019) noted that UDL workshop training has the potential to benefit academics with negative attitudes towards disability.

In the introduction of UDL workshops, it is important to stress that it should be done at the design stage of the curriculum (McKenzie & Karisa, 2021). This is so that academics adequately prepare both for existing barriers to the curriculum and potential barriers (McKenzie & Karisa, 2021).

This UDL workshop then should not be a once off but a continuous building upon inclusive teaching and learning strategies and sharing best practice across departments (Scott, 2018).

2. UCT and other higher education institutions should include accessible curriculum development in staff KPAs as findings of this study noted. But this can only be done after UDL training workshops have been provided for academics. This ensures that the barriers to accessible curriculum development such as no time due to workload related to research and promotion are mitigated because, being part of academic KPAs, the time needed for this will be officially recognised by the university and supported through UDL training workshops.
3. Develop an institutional response in the form of policy that adapts UCT and other higher education's current operational model which is currently based on a retrofitting model into accessibility in mind from the start. The Discussion chapter noted that retrofitting entails working on solutions after the curriculum has been created to accommodate student with disability (Marks, Woolcott & Markopoulos, 2021). Policy should also target support services (admissions system, student management systems (PeopleSoft), UCT website, learning management system (Amathuba), library services websites and disability services operations) at UCT and other higher education institutions. Support services should be equipped to transition from a retrofitting model to a design with accessibility from the start. This means in the purchase of ICTs, design and implementation, accessibility from the start should become a standard practice and policy should reflect this. The policy will drive change in institutional culture so that accessible curriculum and support services gradually becomes the way of business at the UCT. This also applies to other universities both within South Africa and beyond. This also indicates that adequate funding and

resources need to be set aside by the university because not only will implementation of accessibility from the design stage include students with VI, but universities will actually be at a competitive advantage by being more inclusive. This can translate to increased enrolment to students with VI.

4. Decentralise curriculum accessibility and support services to all departments at UCT and other higher education institutions rather than leaving it to the disability services department alone, a finding also echoed by Mole's (2013) study. Including accessible curriculum in staff key performance areas with the right support will help decentralise curriculum accessibility challenges. The recommendation noted above on UDL workshops will also help achieve this for curriculum development. For support services, especially with all ICTs, the web content accessibility guidelines which guide all web content creation and maintenance, whether viewed through a mobile phone, tablet, laptop, or desktop, will support staff to design, buy or build ICTs that are accessible (Web Content Accessibility Guidelines [WCAG], 2018; Petrie, Savva & Power, 2015). This has the potential to further entrench accessibility into the university's operational model.
  
5. With ICTs come barriers that have to do with access to opportunities to digital literacies noted in this study. UCT and other higher education institutions should consider the eight elements of digital literacies and confirm that students with VI have access to them and can use them. I will go over each element with recommendations to UCT and other higher education institutions:
  - i. **Cultural element:** This requires UCT and other higher education institutions to be cognisant of the context of the university where students study but also the context that a student comes from (Belshaw, 2014). Both contexts come with issues, norms and habits which affect how students with VI navigate different digital environments. With today's pervasiveness of ICTs across all contexts, learning now happens at university, home, work, and in social contexts. Each of these contexts is enabled with ICTs and therefore becomes a digital environment (IGI Global, 2022). Therefore, if students are to use ICTs at home, work, and in social contexts to learn, then these contexts need to be



considered as extensions of learning where students with VI experience barriers. When a student with VI is given homework to do, for instance, a disabling digital environment at home can be lack of assistive technology or an inaccessible course site which means a student with VI has to wait until they physically get back to university the next day to get help, which negatively impacts on their ability to complete the task. UCT experienced some of these barriers during COVID-19, not just for students with VI but for students from disadvantaged backgrounds who lacked devices, internet data and a conducive environment to access learning. COVID-19 demonstrated that even before COVID-19, learning was not optimum in the context of the home. However, non-disabled students can make alternative arrangements, but this is not the same for students with VI who cannot do much when trying to use an inaccessible course site from home.

- ii. **Cognitive:** With the operationalisation of ICTs recommended in point three above, the cognitive element is strengthened for students with VI. From the Literature Review chapter, the cognitive element is the ability to use a range of devices, software, and interfaces (Belshaw, 2014). Operationalising ICTs with accessibility in mind from the start means students with VI can be better immersed in digital environments in every context as noted in the cultural element above. When immersed in a digital environment, a wide range of decisions around using different devices and software lie in wait for a student. For instance, when searching for articles in the UCT online library system, many articles are presented to students with VI just like their non-disabled counterparts. Students with VI decide on which article(s) to examine. If they examine the first one, if it does not support their study, they back up and go to the second article. If the second one supports their study, they download it. In this second article, there may be recommendations from the author to explore other articles or ideas or they could look at the reference list to explore other articles. The student is off again to find new resources. In this process, a student with VI develops fluency in academic search. They learn new and better ways to search the more they can search without encountering accessibility barriers. With operationalisation of ICTs with accessibility from

the start, UCT can minimise the accessibility barriers students with VI meet and thus students with VI continue to increase their fluency with working with devices, learning management systems, student support systems, and with library systems allowing them to pursue new ways that expand their minds. This operationalisation also means UDL's multiple means in representation, action and expression and engagement can be realised because students with VI get access to multiple accessible learning means to complete educational tasks.

- iii. **Constructive:** Success in expanding the mind as the cognitive element above notes, leads to an increased ability of a student with VI to find academic resources that are useful for their learning, and to transform it by adding their own insights and therefore construct something new. UCT's successful operationalisation of ICTs will provide access to opportunities for students with VI to construct academic works in new and interesting ways (Belshaw, 2014). One student with VI may need software to enlarge information on a computer screen while another may prefer using a screen reading software on a computer. UDL ensures that both means are available for students with VI while UCT ICT operationalisation ensures that no matter which the student chooses, it remains accessible.
- iv. **Communicative:** Literacy applies in multiple contexts as noted in recommendation point five - it involves social practices that are beyond reading and writing but with academic purpose (Perry, 2012; Belshaw, 2014). Therefore, UCT's operationalisation with accessibility from the start and UDL multiple means ensure students with VI can become more purposeful in their academic work. This ability to be more purposeful means they become more capable just like their non-disabled peers and will help dispel fears that accommodating them may lower academic standards mentioned earlier.
- v. **Confident:** Operationalising UCT's ICT's processes with accessibility in mind from the start and driving curriculum change through UDL has the combined effect of building students with VI's confidence in solving their own academic challenges to grow (Belshaw, 2014), challenges such as meeting academic outcomes. With UCT's adoption of UDL, students with VI's confidence also

grows as they gradually become independent and increasingly manage their own learning in digital environments (Belshaw, 2014).

- vi. **Creative:** The creative element is based on exploiting the affordances of digital technology and the ability to exercise a level of freedom to create something new of value in using these affordances (Belshaw, 2014). Accessible UCT ICTs provide the baseline that allows students with VI to use accessible devices, software, and interfaces with ease and UDL practices then allows students with VI to create something of value. Belshaw (2014) notes something further. Creativity also involves being comfortable to take risks, going beyond solving problems but also finding new challenges. There is a positive gratification in solving problems and UCT's operationalisation with accessibility from the start coupled with UDL multiple means will help students with VI to increasingly become comfortable to take risks and as such increasingly become more independent to create new academic things of value.
- vii. **Critical:** The critical element is about academic awareness of how limited teaching and learning practices can cause exclusion of students with VI. The choice of scanning academic material to make them available online for students reflects a lack of awareness of the challenge it presents for students with VI as a screen reader cannot access such material. That is an example of academic behaviour noted in the literature review as a hidden curriculum element. With UDL practices and design from the start, such academic behaviour will offer multiple means to access the information. One form could be in a Word document which is more accessible or an audio transcript.
- viii. **Civic:** Using digital literacies to self-organise with an academic purpose is what Belshaw (2014) notes about the civic element. UCT's policy on accessible curriculum recommended in point three above will indicate a clear purpose. UDL implementation will cement this purpose further with action which will demonstrate the will to see that students with VI can fully participate in the curriculum supported through ICTs designed or purchased with accessibility in mind from the start. Students with VI can participate in student societies, being part of the student representative council, and join and run social and sports

clubs. In this way, they disrupt the deficit view and are seen as equal contributing members of the society.

6. The last recommendation from this study is that which maintains the quality of accessible ICTs. In the purchase and design of ICTs at UCT with accessibility in mind from the start, there is a very good chance that accessibility challenges will be reduced for students with VI. UCT and other higher education institutions should not just stop at the purchase, design or implementation of accessible ICTs but should include user testing with persons with disability including persons with VI (Park, So & Cha, 2019). This is because automated testing and manual testing cannot pick up all the accessibility challenges within a course site. User testing mimics real world use because the test is done with the actual users who will use the systems such as students with VI. They have a good chance of picking up challenges that automated or manual testing might miss. Therefore, this study recommends that, in addition to automated testing and manual testing, user testing with students or persons with VI should complement both. Subsequent changes throughout the lifespan of the system should also undergo testing.

### **7.5.2 Recommendations for future research**

I had mentioned that the Disability Services departments at universities sometimes don't cooperate with academic staff members in accommodation of students with disabilities therefore, future research could look into why. This is because it will inform one of the recommendations of this study which was the working together of all departments at the university for inclusion of students with VI in curriculum.

Future research can also look into access to the eight elements of digital literacies to pick up barriers to them for students with VI and if they uncover similar or new barriers based upon their university context and the way they operationalise their teaching and learning practice.

A future study involving more than one university would be valuable because it could reveal more subtle understandings which may be opposing about equitable access to the curriculum for students with VI. Lastly, a future study exploring how the hidden curriculum can be made

explicit can reveal previously unknown hidden curriculum elements that affect the enacted curriculum in the inclusion of students with VI in the curriculum.

## **7.6 Conclusions**

This chapter covered recommendations that came out of the study to have a good chance to achieve equitable access to the curriculum at UCT and other higher education institutions for students with VI. It covered a combination of recommendations which, if it is to be realised, requires the working together of all departments at UCT, including UCT management, to sustain equitable access to the curriculum for students with VI.

## 8 References

- Adobe. 2022. *Create and verify PDF accessibility (Acrobat Pro)*. Available: <https://helpx.adobe.com/acrobat/using/create-verify-pdf-accessibility.html> [2022, July 16]
- Akgül, Y. 2018. Accessibility evaluation of MOOCS' websites of Turkey. *Journal of Life Economics*. 5(4):23-36.
- Al-Azawei, A., Serenelli, F. & Lundqvist, K. 2016. Universal Design for Learning (UDL): A content analysis of peer reviewed journals from 2012 to 2015. *Journal of the Scholarship of Teaching and Learning*. 16(3):39-56.
- Al-Harrasi, A. & Taha, A. 2019. Networked library access and services delivery for the blind and visually impaired university students: Evidence from the UAE. *Information Discovery and Delivery*. 47(3):117-124.
- Aldersey, H.M. 2013. Disability advocacy in Kinshasa, Democratic Republic of the Congo. *Disability & Society*. 28(6):784-797.
- Alhammadi, M. 2016. Educational rights for learners with vision impairment in UAE higher education institutions: Addressing the gap between Federal Law No. (29), 2006, and the reality of practice. *British Journal of VI*. 34(2):156-166.
- Alquraini, T.A. & Rao, S.M. 2020. Assessing teachers' knowledge, readiness, and needs to implement Universal Design for Learning in classrooms in Saudi Arabia. *International Journal of Inclusive Education*. 24(1):103-114.
- Angiello, R. 2010. Study looks at Online Learning vs. Traditional Instruction. *The Education Digest*. 76(2):56.
- Arbee, A. 2012. *Knowledge and knowers in the discipline of marketing at the University of KwaZulu-Natal*. Ph.D. Thesis. University of KwaZulu-Natal. Available: [https://ukzn-dspace.ukzn.ac.za/bitstream/handle/10413/6237/Arbee\\_Aradhna\\_2012.pdf?sequence=1&isAllowed=y](https://ukzn-dspace.ukzn.ac.za/bitstream/handle/10413/6237/Arbee_Aradhna_2012.pdf?sequence=1&isAllowed=y) [2022, November 23].

- Aron, L. & Loprest, P. 2012. Disability and the education system. *The Future of Children*. 22(1):97-122.
- Aspler, J., Zizzo, N., Di Pietro, N. & Racine, E. 2018. Stereotyping and stigmatising disability: A content analysis of Canadian print news media about fetal alcohol spectrum disorder. *Canadian Journal of Disability Studies*. 7(3):89-121.
- Assembly, U.G. 1948. Universal declaration of human rights. *UN General Assembly*.
- Bakri, S.T. 2019. *Reasonable accommodation for students with disabilities/learning disabilities: Perspectives of university faculty, staff, and students*. Ph.D. Thesis. Trinity College Dublin. Available: <http://www.tara.tcd.ie/bitstream/handle/2262/86885/final%20draft%20Screen%20eThesis.pdf?sequence=5&isAllowed=y> [2022, August 19].
- Baucum-Manross, L. 2016. *Middle School Teachers' Perspectives of Transitioning from the Traditional Teaching Model to the Blended Learning Model: A Phenomenological Study*. Ph.D. Thesis. Liberty University. Available: <https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=2353&context=doctoral> [2022, November 3].
- Bellei, C. & Cabalin, C. 2013. Chilean Student Movements: Sustained Struggle to Transform a Market-Oriented Educational System. *Current Issues in Comparative Education*. 15(2):108-123.
- Belshaw, D. 2014. *The essential elements of digital literacies*. Self-published. Available: <https://doughelshaw.com/essential-elements-book.pdf> [2018, February 22].
- Bhatt, I. 2012. Digital literacy practices and their layered multiplicity. *Educational Media International*. 49(4):289-301.
- Botha, M.M. 2007. Africanising the curriculum: An exploratory study. *South African Journal of Higher Education*. 21(2):202-216.
- Braat, M. 2021. *Evolving Inclusive Learning: From Retrofitting Disability to Designing for Variability*. Ph.D. Thesis. Western University Canada. Available:

- <https://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=1302&context=oip> [2022, November 15].
- Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 3(2):77-101.
- Brown, S.R. 1980. *Political subjectivity: Applications of Q methodology in political science*. New Haven, London: Yale University Press.
- Brown, S.R. 1993. A primer on Q methodology. *Operant Subjectivity*. 16(3/4):91-138.
- Burgstahler, S. 2021. A universal design framework for addressing diversity, equity, and inclusion on postsecondary campuses. *Review of Disability Studies: An International Journal*. 17(3): 1-24.
- 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.
- Callus, A. & Camilleri-Zahra, A. 2017. Nothing about us without us: Disabled people determining their human rights through the UNCRPD. *Mediterranean Review of Human Rights* 1: 1–26.
- Center for Applied Special Technology. 2022. *About Universal Design for Learning*. Available: <https://www.cast.org/impact/universal-design-for-learning-udl> [2022, October 23].
- Center for Applied Special Technology. 2018. *Universal design for learning guidelines version 2.2*. Available: [https://udlguidelines.cast.org/binaries/content/assets/udlguidelines/udlg-v2-2/udlg\\_graphicorganizer\\_v2-2\\_numbers-yes.pdf](https://udlguidelines.cast.org/binaries/content/assets/udlguidelines/udlg-v2-2/udlg_graphicorganizer_v2-2_numbers-yes.pdf) [2022, September 5]
- Center for Higher Education Development. 2017. *Strategic Plan draft*. Available: [https://webcms.uct.ac.za/sites/default/files/image\\_tool/images/185/CHED%20STRATEGIC%20PLAN%20FINAL%2017%20July%202017.pdf](https://webcms.uct.ac.za/sites/default/files/image_tool/images/185/CHED%20STRATEGIC%20PLAN%20FINAL%2017%20July%202017.pdf) [2022, October 14].
- Chibaya, G., Govender, P. & Naidoo, D. 2021. United Nations Convention on the Rights of Person with Disabilities (UNCRPD) Implementation: Perspectives of persons with disabilities in Namibia. *Occupational Therapy International*. 2021: 1-17.



- Chiwandire, D. 2019. Universal Design for learning and disability inclusion in South African higher education curriculum. *Alternation Special Edition*. 27:6-36.
- Chou, C., Cotch, M.F., Vitale, S., Zhang, X., Klein, R., Friedman, D.S., Klein, B.E. & Saaddine, J.B. 2013. Age-related eye diseases and VI among US adults. *American Journal of Preventive Medicine*. 45(1):29-35.
- Coffey, K. 2019. *Universal design for learning and assistive technology*. Available: <https://www.slideserve.com/omana/universal-design-for-learning-assistive-technology-powerpoint-ppt-presentation> [2019, April 14].
- Coffman, S. & Draper, C. 2022. Universal design for learning in higher education: A concept analysis. *Teaching and Learning in Nursing*. 17(1):36-41.
- Connelly, F.M., He, M.F. & Phillion, J. 2008. *The Sage handbook of curriculum and instruction*. Sage.
- Cortiella, C. & Horowitz, S.H. 2014. The state of learning disabilities: Facts, trends and emerging issues. *New York: National Center for Learning Disabilities*. 25(3):2-45.
- Czerniewicz, L., Deacon, A., Walji, S. & Glover, M. 2017. OER in and as MOOCs. In *Adoption and impact of OER in the Global South*. C. Hodgkinson-Williams & P. Arinto, Eds. Cape Town & Ottawa: African Minds, International Development Research Centre & Research on Open Educational Resources . 349-386.
- Dalton, E.M., McKenzie, J.A. & Kahonde, C. 2012. The implementation of inclusive education in South Africa: Reflections arising from a workshop for teachers and therapists to introduce Universal Design for Learning. *African Journal of Disability*. 1(1): 1-7.
- Debrowski, A. 2021. VI: *What is impaired vision?* Available: <https://www.allaboutvision.com/conditions/lowvision/visual-impairment/> [2022, November 10]
- Department of Higher Education and Training. 2021. *Statistics post-school education training in South African 2021*. Available: <https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post->

School%20Education%20and%20Training%20in%20South%20Africa%202021.pdf [2023, April 16].

Department of Social Development. 2015. *White paper on the rights of persons with disabilities*. Available:

<https://www.dsd.gov.za/index.php/documents?task=download.send&id=60&catid=14&m=0> [2022, November 14]

Dolmage, J. 2017. From steep steps to retrofit to universal design, from collapse to austerity: Neo-liberal spaces of disability. In *Disability, Space, Architecture*. J. Boys. Ed. London & New York: Routledge. 102-113.

Donohue, D. & Bornman, J. 2014. The challenges of realising inclusive education in South Africa. *South African Journal of Education*. 34(2): 1-14.

Douglas, G. and McLinden, M., 2004. Visual impairment. *SPECIAL TEA*, p.26.

Dreyer, L.M. 2017. Constraints to quality education and support for all: A Western Cape case. *South African Journal of Education*. 37(1): 1-11.

Eguavoen, E.O. 2016. ICT utilization as correlates of academic performance among students with VI in Lagos state, Nigeria. *European Scientific Journal*. 12(13): 205-224.

Essack, S.Y. 2012. Translating equitable access into retention and success in African higher education: The role and responsibility of individual institutions. *Journal of Higher Education in Africa/Revue De L'Enseignement Supérieur En Afrique*. 10(2):47-62.

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.

Flynn, E. & Arstein-Kerslake, A. 2014. Legislating personhood: Realising the right to support in exercising legal capacity. *International Journal of Law in Context*. 10(1):81-104.

Fontein-Kuipers, Y. 2016. Development of a Q-set for a Q-method study about midwives' perspectives of woman-centered care. *Health Edu Care*. 1(2):31-36.

- Furlong, J. & Davies, C. 2012. Young people, new technologies and learning at home: Taking context seriously. *Oxford Review of Education*. 38(1):45-62.
- Fyson, R. & Cromby, J. 2013. Human rights and intellectual disabilities in an era of 'choice'. *Journal of Intellectual Disability Research*. 57(12):1164-1172.
- Ganyaupfu, E.M. 2013. Teaching methods and students' academic performance. *International Journal of Humanities and Social Science Invention*. 2(9):29-35.
- Gibb, A., Haskins, G. & Robertson, I. 2013. Leading the entrepreneurial university: Meeting the entrepreneurial development needs of higher education institutions. In *Universities in change*. A. Altmann & B. Ebersberger. Eds. New York. Springer. 9-45.
- Gladhart, M.A. 2010. Determining faculty needs for delivering accessible electronically delivered instruction in higher education. *Journal of Postsecondary Education and Disability*. 22(3):185-196.
- Hamblet, E.C. 2014. Nine strategies to improve college transition planning for students with disabilities. *Teaching Exceptional Children*. 46(3):53-59.
- Hamilton-Jones, B.M. & Vail, C.O. 2014. Preparing special educators for collaboration in the classroom: Pre-service teachers' beliefs and perspectives. *International Journal of Special Education*. 29(1):76-86.
- Harpur, P. & Suzor, N. 2013. Copyright protections and disability rights: turning the page to a new international paradigm. *University of New South Wales Law Journal*. 36(3):745-778.
- He, M.F., Schultz, B.D. & Schubert, W.H. 2015. *The SAGE guide to curriculum in education*. California, United States of America: Sage Publications.
- Hewett, R., Douglas, G., McLinden, M. & Keil, S. 2017. Developing an inclusive learning environment for students with VI in higher education: Progressive mutual accommodation and learner experiences in the United Kingdom. *European Journal of Special Needs Education*. 32(1):89-109.
- Hodgkinson-Williams, C. & Cox, G. 2015. *Position Paper: Open Educational Resources*. Available:

[https://open.uct.ac.za/bitstream/handle/11427/14040/FA\\_Hodgkinson%20Cox\\_Sept2015.docx?sequence=1&isAllowed=y](https://open.uct.ac.za/bitstream/handle/11427/14040/FA_Hodgkinson%20Cox_Sept2015.docx?sequence=1&isAllowed=y) [2022, October 11].

Hodgkinson-Williams, C. & Donnelly, S. 2014. *Sustaining OER at the University of Cape Town: Free, but not cheap*. Available: <https://open.uct.ac.za/handle/11427/9223> [2022, October 12].

Hodgson, T.F. & Khumalo, S. 2015. *Left in the dark: Failure to provide access to quality education to blind and partially sighted learners in South Africa*. Braamfontein, Johannesburg: Section 27.

Hollingsworth, A.B. 2013. *Q methodology as a needs assessment tool for Biology graduate teaching assistants participating in an instructional training program*. Ph.D. Thesis. The University of Akron. Available: [https://etd.ohiolink.edu/apexprod/rws\\_etd/send\\_file/send?accession=akron1384775755&disposition=inline](https://etd.ohiolink.edu/apexprod/rws_etd/send_file/send?accession=akron1384775755&disposition=inline) [2022, November 10].

IGI Global. 2022. *What is Digital Environment*. Available: <https://www.igi-global.com/dictionary/models-of-competences-for-the-real-and-digital-world/7610> [2022, October 7].

Irvan, M., Damayanto, A., Jauhari, M.N. & Aqilah, T.S. 2021. The Effectiveness Factors of Online Learning through Learning Management System for Students with Disabilities. *2021 7th International Conference on Education and Technology (ICET)*. IEEE. 107-110.

Jiménez, T.C., Graf, V.L. & Rose, E. 2007. Gaining access to general education: The promise of universal design for learning. *Issues in Teacher Education*. 16(2):41-54.

Kran, B.S., Lawrence, L., Mayer, D.L. & Heidary, G. 2019. Cerebral/cortical VI: A need to reassess current definitions of VI and blindness. *Elsevier*. 31: 25-29.

Lankshear, C., & Knobel, M. 2007. Sampling “the new” in new literacies. *In A new literacies sampler*. M. Knobel & C. Lankshear, Eds. New York: Peter Lang. 1–24.

- Le Fanu, G., Schmidt, E. & Virendrakumar, B. 2022. Inclusive education for children with VIs in sub-Saharan Africa: Realising the promise of the Convention on the Rights of Persons with Disabilities. *International Journal of Educational Development*. 91:102574.
- Lemke, C. 2002. enGauge 21st Century Skills: Digital Literacies for a Digital Age.
- Lieberman, L.J., Haegele, J.A., Columna, L. & Conroy, P. 2014. How students with VIs can learn components of the expanded core curriculum through physical education. *Journal of VI & Blindness*. 108(3):239-248.
- Lipka, O., Khouri, M. & Shecter-Lerner, M. 2020. University faculty attitudes and knowledge about learning disabilities. *Higher Education Research & Development*. 39(5):982-996.
- Litosseliti, L. 2003. *Using focus groups in research*. London, England: A&C Black.
- Littlejohn, A., Beetham, H. & McGill, L. 2012. Learning at the digital frontier: A review of digital literacies in theory and practice. *Journal of Computer Assisted Learning*. 28(6):547-556.
- Liu, Y. 2005. Effects of online instruction vs. traditional instruction on students' learning. *International Journal of Instructional Technology and Distance Learning*. 2(3):57-64.
- Loeng, S. 2020. Self-directed learning: A core concept in adult education. *Education Research International*. 2020(3816132): 1-12.
- Lombardi, A., Murray, C. & Dallas, B. 2013. University faculty attitudes toward disability and inclusive instruction: Comparing two institutions. *Journal of Postsecondary Education and Disability*. 26(3):221-232.
- Luke, A., Woods, A. & Weir, K. 2013. Curriculum design, equity and the technical form of the curriculum. In *Curriculum, syllabus design and equity: A primer and model*. New York, NY: Routledge. 6-39.
- Madhesh, A. 2021. Full exclusion during COVID-19: Saudi deaf education is an example. *Heliyon*. 7(3): e06536.
- Marrakesh Treaty. (2013). *Marrakesh treaty to facilitate access to published works for persons who are blind, visually impaired, or otherwise print disabled*. Available:

<https://www.aripo.org/wp-content/uploads/2018/11/Marrakesh-Treaty.pdf> [2023, April 20].

Marks, A., Woolcott, G. & Markopoulos, C. 2021. Differentiating instruction: Development of a practice framework for and with secondary mathematics classroom teachers. *International Electronic Journal of Mathematics Education*. 16(3):657.

McCarthy, P. & Shevlin, M. 2017. Opportunities and challenges in secondary education for blind/vision-impaired people in the Republic of Ireland. *Disability & Society*. 32(7):1007-1026.

McCowan, T. 2016. Three dimensions of equity of access to higher education. *Compare: A Journal of Comparative and International Education*. 46(4):645-665.

McCowan, T. 2004. The growth of private higher education in Brazil: Implications for equity and quality. *Journal of Education Policy*. 19(4):453-472.

McGuire, J.M., Scott, S.S. & Shaw, S.F. 2006. Universal design and its applications in educational environments. *Remedial & Special Education*. 27(3):166-175.

McKenzie, J.A. 2009. Constructing the intellectually disabled person as a subject of education: A discourse analysis using Q-methodology. Ph.D. Thesis. Rhodes University.

McKenzie, J.A. & Karisa, A. 2021. *Applying Universal Design for Learning in Blended Courses*. Available:  
<https://docs.google.com/document/d/1JSxQ8gl1wx0xdN1QXuiV2c17LvfXBFiY/edit#>  
[2022, April 20].

McKeown, B. & Thomas, D. 2013. Communication Concourses, Q Samples, and Conditions of Instruction. In *Q Methodology*. 3<sup>rd</sup> ed. Thousand Oaks: SAGE Publications, Inc. 29-37.

Merriam-Webster. 2023. Centralize definition and meaning. Available:  
<https://www.merriam-webster.com/dictionary/centralize> [2023, April 15].

Messiou, K. 2017. Research in the field of inclusive education: Time for a rethink? *International Journal of Inclusive Education*. 21(2):146-159.

- Meyers, E.M., Erickson, I. & Small, R.V. 2013. Digital literacy and informal learning environments: An introduction. *Learning, Media and Technology*. 38(4):355-367.
- Microsoft. 2022. Improve accessibility with the Accessibility Checker. Available: <https://support.microsoft.com/en-us/office/improve-accessibility-with-the-accessibility-checker-a16f6de0-2f39-4a2b-8bd8-5ad801426c7f> [2022, July 16]
- Mole, H. 2013. A US model for inclusion of disabled students in higher education settings: The social model of disability and universal design. *Widening Participation and Lifelong Learning*. 14(3):62-86.
- Moon, N.W., Todd, R.L., Morton, D.L. & Ivey, E. 2012. Accommodating students with disabilities in science, technology, engineering, and mathematics (STEM). *Atlanta, GA: Center for Assistive Technology and Environmental Access, Georgia Institute of Technology*.
- Moriña, A. 2017. Inclusive education in higher education: Challenges and opportunities. *European Journal of Special Needs Education*. 32(1):3-17.
- Muller, J. 2014. Every picture tells a story: Epistemological access and knowledge. *Education as Change*. 18(2):255-269.
- Mullins, L. & Preyde, M. 2013. The lived experience of students with an invisible disability at a Canadian university. *Disability & Society*. 28(2):147-160.
- Mutisya, D.N. & Makokha, G.L. 2016. Challenges affecting adoption of e-learning in public universities in Kenya. *E-Learning and Digital Media*. 13(3-4):140-157.
- Mzangwa, S.T. 2019. The effects of higher education policy on transformation in post-apartheid South Africa. *Cogent Education*. 6(1):1592737.
- Naipal, S. & Rampersad, N. 2018a. A review of VI. *African Vision and Eye Health*. 77(1):1-4.
- Nasiforo, B.M. 2015. Academic impediments students with VIs encounter in the colleges of University of Rwanda. Unpublished Doctoral Dissertation, Kenyatta University, Kenyatta.
- National Student Financial Aid Scheme. *Disability Support*. Available: <https://www.nsfas.org.za/content/disability-support.html> [2023, April 20].

- Ndlovu-Gatsheni, S.J. 2018. Rhodes must fall. In *Epistemic Freedom in Africa: Deprovincialization and Decolonization*. S.J Ndlovu-Gatsheni, Ed. London & New York: Taylor & Francis.
- Ng, W. 2012. Can we teach digital natives digital literacy? *Computers & Education*. 59(3):1065-1078.
- Nicholas, J.B. 2009. My first Q Study: Investigating Student Views about the Use of Instructional Technology and Lessons Learned. *International Society for the Scientific Study of Subjectivity Annual Conference, St. Louis, MO*.
- Nicholas, J.B. 2011. *Investigating Engineering Educators' Views on the use of Educational Technology: A Q Methodology Study*. Ph.D. Thesis. University of Akron. Available: [https://etd.ohiolink.edu/apexprod/rws\\_etd/send\\_file/send?accession=akron1308681264&disposition=attachment](https://etd.ohiolink.edu/apexprod/rws_etd/send_file/send?accession=akron1308681264&disposition=attachment) [2022, October 14].
- Nieminen, J.H. 2022. Governing 'the disabled assessee': A critical reframing of assessment accommodations as sociocultural practices. *Disability & Society*. 37(8):1293-1320.
- Nwanze, I., 2016. *How can we include disability issues in undergraduate curricula at the University of Cape Town?* (Master's thesis, University of Cape Town).
- Office of the Vice-President. 1997. South Africa Integrated National Disability Strategy White Paper, 1997. Pretoria: Office of the Vice- President.
- Ohajunwa, C., 2012. *A study to determine the extent and nature of disability inclusion within the curriculum of the Faculty of Humanities, University of Cape Town* (Master's thesis, University of Cape Town).
- Opie, J. 2018. Educating students with vision impairment today: Consideration of the expanded core curriculum. *British Journal of VI*. 36(1):75-89.
- Özdemir, N. 2018. The relationship between hidden curriculum perception and University Life Quality in Sports Education. *Universal Journal of Educational Research*. 6(4):742-750.
- Park, K., So, H. & Cha, H. 2019. Digital equity and accessible MOOCs: Accessibility evaluations of mobile MOOCs for learners with VIs. *Australasian Journal of Educational Technology*. 35(6):48-63.



- Pascolini, D. & Mariotti, S.P. 2012. Global estimates of VI: 2010. *British Journal of Ophthalmology*. 96(5):614-618.
- Penprase, B.E. 2018. The Fourth Industrial Revolution and Higher Education. In *Higher Education in the Era of the Fourth Industrial Revolution*. N.W. Gleason, Ed. Singapore: Springer. 207-229.
- Perry, K.H. 2012. What is literacy? A critical overview of sociocultural perspectives. *Journal of Language and Literacy Education*. 8(1):50-71.
- Petrie, H., Savva, A. & Power, C. 2015. Towards a unified definition of web accessibility. *Proceedings of the 12th International Web for all Conference*. 1-13.
- Pillay, S.R. 2016. Silence is violence: (Critical) psychology in an era of Rhodes Must Fall and Fees Must Fall. *South African Journal of Psychology*. 46(2):155-159.
- Power, C., Freire, A., Petrie, H. & Swallow, D. 2012. Guidelines are only half of the story: Accessibility problems encountered by blind users on the web. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 433-442.
- Pratt, M. 2019. *ICT (information and communications technology, or technologies)*. Available: <https://www.techtarget.com/searchcio/definition/ICT-information-and-communications-technology-or-technologies> [2022, November 10]
- Priestley, M. 2019. Curriculum: Concepts and approaches. *Impact, 6: Broad and Balanced Curriculum*. Available: <https://mripriestley.wordpress.com/2019/01/> [2022, November 11].
- Priestley, M., Philippou, S., Alvunger, D. & Soini, T. 2021. Curriculum making: A conceptual framing. In *Curriculum making in Europe: Policy and practice within and across diverse contexts*. M. Priestley, D. Alvunger, S. Philippou & T. Soini, Eds. Bingley: Emerald Publishing Limited. 1-22.
- Q Methods Software. n.d. Study Analysis. Available: <https://app.qmethodsoftware.com/docs/articles/study-analysis/analysis.html> [2022, March 20]

- Raja, D.S. 2016. Bridging the disability divide through digital technologies. *Background Paper for the 2016 World Development Report: Digital Dividends*.
- Ramlo, S. & Berit, K. 2013. Determining the various perspectives of caregivers of aging adults with Q methodology. *The Family Journal*. 21(1):46-56.
- Ramlo, S.E. & Newman, I. 2011. Q methodology and its position in the mixed methods continuum. *Operant Subjectivity*. 34(3):172-191.
- Ramlo, S. 2005. An application of Q methodology: Determining college faculty perspectives and consensus regarding the creation of a school of technology. *Journal of Research in Education*. 15(1):52-69.
- Ramlo, S. 2016. Mixed method lessons learned from 80 years of Q methodology. *Journal of Mixed Methods Research*. 10(1):28-45.
- Republic of South Africa. 1996. Constitution of the Republic of South Africa. No. 108 of 1996. Available: <https://www.gov.za/sites/www.gov.za/files/images/a108-96.pdf> [2022, October 15]
- Retief, M. & Letšosa, R. 2018. Models of disability: A brief overview. *HTS Teologiese Studies/Theological Studies*. 74(1): 1-8.
- Sahan, H.H., Uyangör, N. & Kervan, S. 2019. Reflections of Turkish Culture on Kosovo Education System: A Study on Hidden Curriculum. *Universal Journal of Educational Research*. 7(3):713-719.  
Available: <http://ezproxy.uct.ac.za/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1207715&site=ehost-live>.
- Scott, L.A. 2018. Barriers with implementing a universal design for learning framework. *Inclusion*. 6(4):274-286.
- Scott, L.A., Thoma, C.A., Puglia, L., Temple, P. & D'Aguiar, A. 2017. Implementing a UDL framework: A study of current personnel preparation practices. *Intellectual and Developmental Disabilities*. 55(1):25-36.
- Simalalo, M. 2017. Assessing the expanded core curriculum for learners with VIs in special schools. Unpublished Doctoral Dissertation. UNISA, Pretoria, South Africa.

- Simui, F., Kasonde-Ngandu, S., Cheyeka, A.M., Simwinga, J. & Ndhlovu, D. 2018. Enablers and disablers to academic success of students with VI: A 10-year literature disclosure, 2007–2017. *British Journal of VI*. 36(2):163-174.
- Singleton, K.J. & Neuber, K.S. 2020. Examining how students with VIs navigate accessible documents. *Journal of VI & Blindness*. 114(5):393-405.
- Siwela, S. 2017. An exploratory case study of the experiences of students with disabilities at a TVET college: Factors that facilitate or impede their access and success. Unpublished Masters Thesis, University of KwaZulu-Natal, Durban.
- Smith, S.J. & Basham, J.D. 2014. Designing online learning opportunities for students with disabilities. *Teaching Exceptional Children*. 46(5):127-137.
- Smith, S.A., Woodhead, E. & Chin-Newman, C. 2021. Disclosing accommodation needs: Exploring experiences of higher education students with disabilities. *International Journal of Inclusive Education*. 25(12):1358-1374.
- Sniatecki, J.L., Perry, H.B. & Snell, L.H. 2015. Faculty attitudes and knowledge regarding college students with disabilities. *Journal of Postsecondary Education and Disability*. 28(3):259-275.
- Solovieva, T.I. & Bock, J.M. 2014. Monitoring for accessibility and university websites: Meeting the needs of people with disabilities. *Journal of Postsecondary Education and Disability*. 27(2):113-127.
- South African Department of Education. 2001. *Education White Paper 6. Special Needs Education. Building and Inclusive Education and Training System*. Available: <http://www.education.gov.za/LinkClick.aspx?fileticket=gVFccZLi/tl=> [2022, October 5].
- Statistics South Africa. 2011. *Census. 2011. Profile of persons with disabilities in South Africa*. Available: <https://www.statssa.gov.za/publications/Report-03-01-59/Report-03-01-592011.pdf> [2023, April 20].
- Stenner, P. & Stainton Rogers, R. 2004. Q methodology and qualiquantology: The example of discriminating between emotions. Mixing methods in psychology. In *Mixing methods in psychology: the integration of qualitative and quantitative methods in theory and*

- practice*. Z. Tod, B. Nerlich, S. McKeown & D. Clark, Eds. New York: Psychology Press. 166-201.
- Suarez-Balcazar, Y. 2020. Meaningful engagement in research: Community residents as co-creators of knowledge. *American Journal of Community Psychology*. 65(3-4):261-271.
- Times Higher Education. 2021. *Best Universities in Africa 2022*. Available: <https://www.timeshighereducation.com/student/best-universities/best-universities-africa> [2021, October 20]
- Timke, E. 2019. Disability and advertising. *Advertising & Society Quarterly*. 20(3): 1-57.
- Tom, S.L., Mpekoa, N. & Swart, J. 2018. Factors that affect the provision of visually impaired learners in higher education. *2018 Conference on Information Communications Technology and Society (ICTAS)*. IEEE. 1-5.
- Ubuntu Centre South Africa. 2020. *Convention on the rights of persons with disabilities*. Available: <https://ubuntucentre.wordpress.com/crpd/> [2020, January 14].
- University of Cape Town. 2011. *University of Cape Town Disability Policy*. Available: [https://www.uct.ac.za/sites/default/files/content\\_migration/uct\\_ac\\_za/39/files/DIS\\_Policy\\_Disability\\_December-2021.pdf](https://www.uct.ac.za/sites/default/files/content_migration/uct_ac_za/39/files/DIS_Policy_Disability_December-2021.pdf) [2022, November 8]
- University of Cape Town. 2018. *Curriculum Change Framework*. Available: <https://www.news.uct.ac.za/images/userfiles/downloads/media/UCT-Curriculum-Change-Framework.pdf> [2022, November 12].
- University of Cape Town. 2019. *University of Cape Town transformation report 2019*. Available: [https://webcms.uct.ac.za/sites/default/files/image\\_tool/images/470/Documents/Reports/2019\\_UCT-Transformation-Report.pdf](https://webcms.uct.ac.za/sites/default/files/image_tool/images/470/Documents/Reports/2019_UCT-Transformation-Report.pdf) [2022, November 12]
- University of Cape Town. 2022. *UCT Factsheet. About UCT*. Available: [http://www.news.uct.ac.za/images/userfiles/files/publications/factsheets/UCT\\_Factsheet\\_01\\_AboutUCT.pdf](http://www.news.uct.ac.za/images/userfiles/files/publications/factsheets/UCT_Factsheet_01_AboutUCT.pdf) [2022, November 12]

- University of Cape Town. 2021. *Redesigning Blended Courses*. Available: [https://docs.google.com/document/d/1mipOa4EEEnYi64dK73RYkyqOK600bOSiSr\\_uAJcdkxEU/edit](https://docs.google.com/document/d/1mipOa4EEEnYi64dK73RYkyqOK600bOSiSr_uAJcdkxEU/edit) [2022, November 2]
- University of Cape Town, 2021. *Vision 2030*. Available: [https://www.news.uct.ac.za/images/userfiles/files/publications/UCT\\_Vision\\_2030.pdf](https://www.news.uct.ac.za/images/userfiles/files/publications/UCT_Vision_2030.pdf) [2022, October 25]
- United Nations. 2006. *Convention on the rights of persons with disabilities*. Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/238405/7905.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/238405/7905.pdf) [2022, October 20]
- Valenta, A.L. & Wigger, U. 1997. Q-methodology: Definition and application in health care informatics. *Journal of the American Medical Informatics Association*. 4(6):501-510.
- Van Exel, J. & De Graaf, G. 2005. Q methodology: A sneak preview. *Retrieved January*. 24:2009.
- Villanueva, I. 2018. What does hidden curriculum in engineering look like and how can it be explored? *Proceedings of the American Society of Engineering Education Annual Conference and Exposition, Minorities in Engineering Division*. 1-16.
- Visagie, S., Scheffler, E. & Schneider, M. 2013. Policy implementation in wheelchair service delivery in a rural South African setting. *African Journal of Disability*. 2(1): 1-9.
- Waitoller, F.R. & King Thorius, K.A. 2016. Cross-pollinating culturally sustaining pedagogy and universal design for learning: Toward an inclusive pedagogy that accounts for dis/ability. *Harvard Educational Review*. 86(3):366-389.
- Watermeyer, B. 2012. *Towards a contextual psychology of disability*. London & New York: Routledge.
- Watts, S. & Stenner, P. 2005. Doing Q methodology: Theory, method and interpretation. *Qualitative Research in Psychology*. 2(1):67-91.
- Watts, S. & Stenner, P. 2012. *Doing Q methodological research: Theory, method & interpretation*. London: Sage.

- Wawrzynski, M.R., Heck, A.M. & Remley, C.T. 2012. Student engagement in South African higher education. *Journal of College Student Development*. 53(1):106-123.
- World Wide Web Consortium. 2018. *Web content accessibility guidelines (WCAG) 2.1*. Available: <https://www.w3.org/TR/WCAG21/> [2022, October 7]
- World Health Organisation. 2013. *Universal eye health. A global action plan 2014-2019*. Available: <https://www.who.int/publications/i/item/universal-eye-health-a-global-action-plan-2014-2019> [2022, October 11]
- World Health Organisation. 2022. *Blindness and vision impairment*. Available: <https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment> [2022, November 12]
- Wyse, D., Hayward, L. & Pandya, J. 2016. *The SAGE handbook of curriculum, pedagogy and assessment*. London: Sage.
- Winter, R.P. & O'Donohue, W. 2012. Academic identity tensions in the public university: Which values really matter? *Journal of Higher Education Policy and Management*. 34(6):565-573.
- World Wide Web Consortium. 2022. *WCAG 2 Overview*. Available: <https://www.w3.org/WAI/standards-guidelines/wcag/> [2022, September 6]
- Wymer, W. & Gross, H. 2021. Charity advertising: A literature review and research agenda. *Journal of Philanthropy and Marketing*. [Special issue]. DOI: 10.1002/nvsm.1723.
- Yazici, K. 2017. The relationship between learning style, test anxiety and academic achievement. *Universal Journal of Educational Research*. 5(1):61-71.
- Zornes, D., 2012. *The business of the university: research, its place in the 'business', and the role of the university in society*. Ph.D. Thesis. University of Victoria.

## 9 Appendices

### 9.1 Appendix 1 – Sample Q set Table

Relevant categories	Dimensions of categories	Sample draft statements
Right to education and the UNCRPD in relation to student with VI	Educational goals of UNCRPD for student with VI (SVI)	Education for children with disability has mostly been seen from the point of access and hardly inclusion.  Students with VI have a right to education without discrimination.
	Implementation of UNCRPD at UCT for SVI	Equal treatment in education for SVI involves equal access to educational opportunities.  Curriculum design at university lacks implementation of the UNCRPD.
	Learning style and reasonable accommodation for SVI at UCT	Students with VI learn differently from other students.  Students with low or limited vision should make arrangements for front-of-class seating in every class.
	Medical and social model view of SVI	Barriers to learning that a student with VI experiences at university is as a result of their impairment.  In an ideal world, the social model of disability wouldn't exist, because society wouldn't be inaccessible.
	Understanding of right to education for SVI	Right to education is a universal one.  The law protects the rights of students with VI therefore, students with VI should know their rights when they get to campus.
Universal design for learning	Accessible pedagogy	Universal Design for Learning is embedded in UCT pedagogy for students with VI

		Often, strategies to make online learning accessible to students with VI promote overall usability, beyond people with disabilities.
	Acceptable level of adaptation for UG curriculum for SVI	UCT has acceptable levels of adaptation to accommodate learning of students with VI.  UCT Disability Policy goes far enough to recommend UDL principles for existing and new courses.
	Multiple means of representation, engagement action and expression	Lecturers feels it is a lot of work to provide multiple ways of completing an educational task.  Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.
	Support services for SVI at UCT	Additional support for students with VI should be catered for on a needs basis.  It is important that visually impaired students create a social support system on campus.
	a. Access to student clubs and societies	Accessibility of clubs and societies for students with VI is done when a student with VI insists on participating.  Today, there are a variety of on-campus clubs, organizations, sororities and fraternities that welcome participants with visual disabilities.
Digital literacies	8 elements of digital literacies	Issues, norms and habits within the cultural context where digital literacies happen may create barriers for students with VI.  Multiple digital literacies are needed to gain literacy at university and access to opportunities to acquire them should be accessible to all students.
	Access, opportunities and barriers to acquire and develop digital literacies SVI	Self-confidence and self-efficacy grow from working across different digital environments and those that are limited from doing this are at a disadvantage.



		The skills needed to successfully navigate and take advantage of different digital literacies such as information literacy, media literacy, computer literacy, visual literacy are lost to students with VI if such literacies are not accessible.
	Types of digital environments	Students with VI have access to learning that happens in different digital environments at home, university, social environment and workplace.
	Context of digital literacies at UCT	Access to social aspects of literacy for students with VI is considered an add-on and not core to the learning practice.  Students with VI also need to navigate different contexts of home, work, university and social to learn but these context are usually not accessible.
	Online systems, assistive devices, social media, emails and internet	Accessibility is a responsibility.  Accessibility is an opportunity.
Hidden and enacted curriculum	Access to curriculum content for SVI	The curriculum at university is mainly designed for abled bodied students.  The technical curriculum which determines what knowledge should be prioritized has not changed from its abled bodied focus, making it difficult for disability inclusion.
	Day-to-day experience of the curriculum	Epistemological access to the undergraduate curriculum for students with VI leads to full participation.  The relationships, norms, interactions, consideration for class size, teaching methods and resources of the enacted curriculum are still centred on ableist considerations from the conceptualization and design stages.

	Impact of the unconscious aspect of the curriculum	<p>There is a hidden anxiety about teaching students with disabilities which unconsciously influences the effort to make teaching and learning accessible.</p> <p>As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.</p>
	Curriculum design, teaching and assessment	<p>The ideological direction of the curriculum caters mainly to abled bodied ideals.</p> <p>Curriculum is the experiences that individuals require for full participation in society.</p>
	Inclusive curriculum	<p>A proactive approach is needed to make the curriculum inclusive of students with VIs.</p> <p>Inclusive curriculum helps in developing liberty, fraternity and equality in the minds of students.</p>
	Online curriculum	<p>Online curriculum offers a better opportunity for inclusion of the learning style of students with VI than the traditional curriculum.</p> <p>Accessible online curriculum should be part of lecturer's performance appraisal.</p>
	Successful acquisition of knowledge needed for courses	<p>Challenges to reading and writing for students with VI at university are significant.</p>

## 9.2 Appendix 2 - Factor array Table 1 (FAT1) for AP study factor 1 and factor 2 (APF1 and APF2)

Statements	F1	F2
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	-1	+1
2. Curriculum design at university lacks implementation of the UNCRPD.	-2	0
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	-3	+4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	0	+4
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4	-4
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, academic and non-academic staff, to shape organisational culture.	+2	+4
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+2	+5
8. Students with VI spend more time overcoming challenges than learning at university.	-1	-2
9. The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.	+1	+5
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4	-3
11. The right to education is both a human right and an enabler of other human rights.	+2	+6
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-2	-3
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	-2	+2
14. Students with VI should demand their rights at university because the law protects their right to education.	-1	+3
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	0	+3
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	0	-1

17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-3	+1
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+5	+6
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	0	+5
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4	-4
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-5	-5
22. Additional support for students with VI should be catered for on a needs basis.	-3	-1
23. It is important that visually impaired students create a social support system on campus.	-2	+1
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-1	0
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3	-3
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0	-2
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	-1	+2
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	0	0
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	+1	-1
31. Lack of assistive technology for students with VI at university is discriminatory.	+4	+2
32. University electronic library databases and their resources are generally accessible to students with VI.	-4	-4
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	+1	-2
34. Lecturers may lack the skills for providing multiple ways of representation, action and expression and engagement using information technology.	+3	+1
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+1	+3
36. Students with VI have become more excluded in the time of COVID-19	0	-3
37. There is little economic benefit for a university in making their course sites accessible.	-5	-5

38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+2	+2
39. Content of a course site cannot be made accessible because it is discipline specific.	-6	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2	+2
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5	+3
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+3	0
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6	-6
44. Designers in the IT department at the university, often generate and evaluate ideas based on what they know, using their own abilities as a baseline. They make things that are easy for non-disabled students to use, but difficult for students with VI.	+2	0
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2	-2
46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site to be accessible unless they are forced to.	-3	-2
47. Curriculum is not just the plan but the entire experience of the education system.	+3	-1
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4	+3
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	+1	-4
50. Challenges to reading and writing for students with VI at university are significant.	+1	0
51. The curriculum at university is mainly designed for abled bodied students.	+6	+1
52. A proactive approach is needed to make the curriculum inclusive for students with VIs.	+5	+4
53. An accessible online curriculum should be part of lecturers' performance appraisal.	+3	-1
54. Students with VI take longer to graduate from university.	-2	-3
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+3	0

56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+4	+1
57. Students with VI don't want to compete to be the best student but just want to pass.	-5	-6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-1	-1
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	+4	-2
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6	+2

### 9.3 Appendix 3 - Study analysis Table (SAT1) Table for Q sorts that significantly loaded unto all participant factor 1 (APF1)

Statements	Q sorts that significantly loaded unto factor 1 of AP study													
	F1	OZA0F	SUJA	7TTP9AV	BH8Q	CLVAV	KBRR4	TW9QT1	UA9N61	5I0DFH7	AKZL	YOITEP3	O2XO	WV99
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	0									+6				
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4	-6							+6		-6		-6	
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+2	+6											+6	
7. Accessibility of course sites is a responsibility of a university and	+2												+6	

an opportunity for inclusion of students with VI.														
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	0		+6		+6									
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	0		+6											
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-3						-6							
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+5				+6		+6		+6					
20. UCT Disability Policy provides adequate recommendations for	-4													



UDL principles for new and existing online courses.													
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-5	-6			-6	-6		-6					
22. Additional support for students with VI should be catered for on a needs basis.	-3								-6				
31. Lack of assistive technology for students with VI at university is discriminatory.	+4	+6											
32. University electronic library databases and their resources are generally accessible to students with VI.	-4			-6									
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	+1												
34. Lecturers may lack the skills for providing multiple ways of representation, action and	+3										+6		

expression and engagement using information technology.														
37. There is little economic benefit for a university in making their course sites accessible.	-5													-6
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+2					+6								
39. Content of a course site cannot be made accessible because it is discipline specific.	-6	-4	-3	-6, -6	0	-6, -6	-4	-3	-6, -6	-4	-6, -6	-1	-1	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2							+6						
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+3			+6										+6

43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all	-6	-5	-6, -6	-5	-5	-4	-6, -6	-5	-6, -6	-6, -6	-2	-5	-6, -6	-6, -6
46. Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site to be accessible unless they are forced to.	-3											-6		
47. Curriculum is not just the plan but the entire experience of the education system.	+3					+6								
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4										+6			
51. The curriculum at university is mainly designed for able bodied students.	+6	+4	+2	0	+4	+5	-1	+3	+1	+1	-1	+5	+3	+2
53. An accessible online curriculum should be part of lecturers' performance appraisal.	+3											+6		
56. Owners of copyrighted educational materials should	+4						+6		+6					

introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.														
57. Students with VI don't want to compete to be the best student but just want to pass.	-5		-6		-6			-6				-6		
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6	+2	+5	+6, +6	-1	+1	+6, +6	+5	+3	+5	-1	+6, +6	+4	+6, +6

#### 9.4 Appendix 4 - Crib sheet Table 1 (CST1) for all participant study factor 1 (APF1)

Items ranked at +6	Rank
51. The curriculum at university is mainly designed for able bodied students.	
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	
Items ranked higher in factor 1 array than in factor 2 array	
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
8. Students with VI spend more time overcoming challenges than learning at university.	-1
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-2
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	0
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-5
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	0
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	+1
31. Lack of assistive technology for students with VI at university is discriminatory.	+4
32. University electronic library databases and their resources are generally accessible to students with VI.	-4
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	+1
34. Lecturers may lack the skills for providing multiple ways of representation, action and expression and engagement using information technology.	+3
36. Students with VI have become more excluded in the time of COVID-19.	0

37. There is little economic benefit for a university in making their course sites accessible.	-5
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+2
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+3
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know, using their own abilities as a baseline. They make things that are easy for non-disabled students to use, but difficult for students with VI.	+2
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2
47. Curriculum is not just the plan but the entire experience of the education system.	+3
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	+1
50. Challenges to reading and writing for students with VI at university are significant.	+1
51. The curriculum at university is mainly designed for able bodied students.	+6
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+5
53. An accessible online curriculum should be part of lecturers' performance appraisal.	+3
54. Students with VI take longer to graduate from university.	-2
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+3
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+4
57. Students with VI don't want to compete to be the best student but just want to pass.	-5
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-1

59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	+4
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6
<b>Items ranked lower in factor 1 array than in factor 2 array</b>	
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	+1
2. Curriculum design at university lacks implementation of the UNCRPD.	0
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	+4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+4
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, academic and non-academic staff to shape organisational culture.	+4
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+5
9. The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+5
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-3
11. The right to education is both a human right and an enabler of other human rights.	+6
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	+2
14. Students with VI should demand their rights at university because the law protects their right to education.	+3
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+3
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	+1
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+6
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+5
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4

21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-5
22. Additional support for students with VI should be catered for on a needs basis.	-1
23. It is important that visually impaired students create a social support system on campus.	+1
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	0
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	+2
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	0
32. University electronic library databases and their resources are generally accessible to students with VI.	-4
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+3
37. There is little economic benefit for a university in making their course sites accessible.	-5
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+2
39. Content of a course site cannot be made accessible because it is discipline specific.	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2
46. Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-2
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-1
<b>Items ranked at -6</b>	
39. Content of a course site cannot be made accessible because it is discipline specific.	
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all	



### 9.5 Appendix 5 - Study analysis Table 2 (SAT2) Table for Q sorts that significantly loaded onto APF2

Statements	Q sorts that significantly loaded onto factor 2 of AP study										
	F2	35TP9T3	3P1ICD8X	KGPBLDZG	V28O	WEB17GL	WPSVGL1	AT0Y5	LO8LYXA	UXQ21T	Y2M2
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	+1	+6									
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	+4									+6	
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+5	+6									
8. Students with VI spend more time overcoming challenges than learning at university.	-2						+6				
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-3		-6								
11. The right to education is both a human right and an enabler of other human rights.	+6	+4	+1	+2	+6, +6	+5	+6, +6	+5	+3	+3	+5
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to	-3				-6						

accommodate the needs of students with disabilities.											
14. Students with VI should demand their rights at university because the law protects their right to education.	+3			+6							
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+6	+3	+3	+1	+4	+3	-2	+6, +6	+3	+3	+6, +6
22. Additional support for students with VI should be catered for on a needs basis.	-1										+6
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	+2								+6		
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	0								-6		
31. Lack of assistive technology for students with VI at university is discriminatory.	+2							+6			
34. Lecturers may lack the skills for providing multiple ways of representation, action and expression and engagement using information technology.	+1								+6		

36. Students with VI have become more excluded in the time of COVID-19	-3										
37. There is little economic benefit for a university in making their course sites accessible.	-5							-6			
39. Content of a course site cannot be made accessible because its discipline specific.	-5									-6	
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6	-6, -6	0	-5	-4	-3	-5	-2	-5	-2	+4
46. Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-2								-6		
47. Curriculum is not just the plan but the entire experience of the education system.	-1									-6	
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+3									+6	
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-4			-6		-6					
50. Challenges to reading and writing for students with VI at university are significant.	0					+6					

51. The curriculum at university is mainly designed for able bodied students.	+1			+6		+6					
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+4		+6								
54. Students with VI take longer to graduate from university.	-3						-6				
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+1				+6			-6			
57. Students with VI don't want to compete to be the best student but just want to pass.	-6	-6, -6	-5	-6, -6	-6, -6	-6, -6	-6, -6	0	-3	-1	-6, -6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-1		+6								
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	-2										-6
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+2		-6								

## 9.6 Appendix 6 - Crib sheet Table 2 (CST2) for all participant study factor 2 (APF2)

Items ranked at +6	Rank
11. The right to education is both a human right and an enabler of other human rights.	
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	
Items ranked higher in factor 2 array than in factor 1 array	
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	+1
2. Curriculum design at university lacks implementation of the UNCRPD.	0
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	+4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+4
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+4
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+5
9. The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.	+5
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-3
11. The right to education is both a human right and an enabler of other human rights.	+6
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	+2
14. Students with VI should demand their rights at university because the law protects their right to education.	+3
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+3
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	+1

18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+6
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+5
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-5
22. Additional support for students with VI should be catered for on a needs basis.	-1
23. It is important that visually impaired students create a social support system on campus.	+1
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	0
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	+2
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	0
32. University electronic library databases and their resources are generally accessible to students with VI.	-4
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+3
37. There is little economic benefit for a university in making their course sites accessible.	-5
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+2
39. Content of a course site cannot be made accessible because it is discipline specific.	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2
46. Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-2
58. Often, a major concern for universities to procure accessible information and communication technologies is due to their high cost.	-1
<b>Items ranked lower in factor 2 array than in factor 1 array</b>	

5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
8. Students with VI spend more time overcoming challenges than learning at university.	-2
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-3
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	-1
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-5
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	-2
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	0
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	-1
31. Lack of assistive technology for students with VI at university is discriminatory.	+2
32. University electronic library databases and their resources are generally accessible to students with VI.	-4
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	-2
34. Lecturers may lack the skills for providing multiple ways of representation, action and expression and engagement using information technology.	+1
36. Students with VI have become more excluded in the time of COVID-19.	-3
37. There is little economic benefit for a university in making their course sites accessible.	-5
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+2
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+3

42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	0
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know, using their own abilities as a baseline. They make things that are easy for non-disabled students to use, but difficult for students with VI.	0
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2
47. Curriculum is not just the plan but the entire experience of the education system.	-1
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+3
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-4
50. Challenges to reading and writing for students with VI at university are significant.	0
51. The curriculum at university is mainly designed for abled bodied students.	+1
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+4
53. An accessible online curriculum should be part of lecturers' performance appraisal.	-1
54. Students with VI take longer to graduate from university.	-3
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	0
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+1
57. Students with VI don't want to compete to be the best student but just want to pass.	-6
58. Often, a major concern for universities to procure accessible information and communication technologies is due to their high cost.	-1
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.	-2
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+2
<b>Items ranked at -6</b>	
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	
57. Students with VI don't want to compete to be the best student but just want to pass.	



## 9.7 Appendix 7 - Factor array Table 2 (FAT2) for SO study factor 1 and 2 (SOF1 and SOF2)

Statements	F1	F2
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	0	-3
2. Curriculum design at university lacks implementation of the UNCRPD.	0	-3
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	-3	+4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+2	+1
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4	-3
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+4	+2
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+4	+2
8. Students with VI spend more time overcoming challenges than learning at university.	-2	-2
9. The confidence, respect and dignity essential for effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+2	+4
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4	-4
11. The right to education is both a human right and an enabler of other human rights.	+5	+4
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-2	-5
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	0	-2
14. Students with VI should demand their rights at university because the law protects their right to education.	-1	+1
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+1	+3
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	+3	-5
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-3	+1

18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+6	+5
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+1	+2
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-3	-4
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-6	-3
22. Additional support for students with VI should be catered for on a needs basis.	-3	-1
23. It is important that visually impaired students create a social support system on campus.	-1	+3
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-1	-2
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3	-2
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0	-1
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	-1	0
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	-1	+3
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	0	0
31. Lack of assistive technology for students with VI at university is discriminatory.	+2	+2
32. University electronic library databases and their resources are generally accessible to students with VI.	-4	-2
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	0	-1
34. Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.	+2	0
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+1	+5
36. Students with VI have become more excluded in the time of COVID-19.	-2	-1
37. There is little economic benefit for a university in making their course sites accessible.	-5	-4

38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+1	+4
39. Content of a course site cannot be made accessible because it is discipline specific.	-5	-6
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+3	0
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5	+3
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+3	+2
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-6	-5
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know, using their own abilities as a baseline. They make things that are easy for non-disabled students to use, but difficult for students with VI.	+1	+2
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2	-1
46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-4	+1
47. Curriculum is not just the plan but the entire experience of the education system.	+1	+1
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+3	+5
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-1	-3
50. Challenges to reading and writing for students with VI at university are significant.	0	-1
51. The curriculum at university is mainly designed for able bodied students.	+5	+1
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+4	+6
53. An accessible online curriculum should be part of lecturers' performance appraisal.	+3	0
54. Students with VI take longer to graduate from university.	-2	-4
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+4	0

56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+2	+6
57. Students with VI don't want to compete to be the best student but just want to pass.	-5	-6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-2	+3
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	+2	-2
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6	0

### 9.8 Appendix 8 - Study analysis Table 3 (SAT3) Table for Q sorts that significantly loaded unto staff only factor 1 (SOF1)

Statements	Q sorts that significantly loaded unto factor 1 of SO study																	
	F	0	1	3	3	5	5	7	B	E	J	L	O	T	V	V	Y	Y
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	0			+														
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+					+												
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-	-											-		-	-		
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+	+											+					







### 9.9 Appendix 9 - Crib sheet Table 3 (CST3) for staff only Factor 1 (SOF1)

Items ranked at +6	Rank
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	
Items ranked higher in factor 1 array than in factor 2 array	
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	0
2. Curriculum design at university lacks implementation of the UNCRPD.	0
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+2
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+4
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+4
8. Students with VI spend more time overcoming challenges than learning at university.	-2
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
11. The right to education is both a human right and an enabler of other human rights.	+5
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-2
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	0
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	+3
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+6
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-3
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-1



26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	0
31. Lack of assistive technology for students with VI at university is discriminatory.	+2
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	0
34. Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.	+2
39. Content of a course site cannot be made accessible because it is discipline specific.	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+3
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+5
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+3
47. Curriculum is not just the plan but the entire experience of the education system.	+1
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-1
50. Challenges to reading and writing for students with VI at university are significant.	0
51. The curriculum at university is mainly designed for abled bodied students.	+5
53. An accessible online curriculum should be part of lecturers' performance appraisal.	+3
54. Students with VI take longer to graduate from university.	-2
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+4
57. Students with VI don't want to compete to be the best student but just want to pass.	-5
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	+2
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+6
<b>Items Ranked Lower in Factor 1 Array than in Other Factor Arrays</b>	

3.	The right to education depends upon the accessibility of information and communication technologies for students with VI.	-3
5.	Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
8.	Students with VI spend more time overcoming challenges than learning at university.	-2
9.	The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+2
10.	UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
14.	Students with VI should demand their rights at university because the law protects their right to education.	-1
15.	A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+1
17.	It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-3
19.	Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+1
21.	UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-6
22.	Additional support for students with VI should be catered for on a needs basis.	-3
23.	It is important that visually impaired students create a social support system on campus.	-1
25.	Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-3
26.	New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
28.	Support for students with VI is usually provided at an individual level and not at an institutional level.	-1
29.	Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	-1
30.	Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	0
31.	Lack of assistive technology for students with VI at university is discriminatory.	+2
32.	University electronic library databases and their resources are generally accessible to students with VI.	-4
35.	A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+1
36.	Students with VI have become more excluded in the time of COVID-19.	-2
37.	There is little economic benefit for a university in making their course sites accessible.	-5

38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+1
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all	-6
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know, using their own abilities as a baseline. They make things that are easy for non-disabled students to use, but difficult for students with VI.	+1
45. It does not make sense to create just a black and white course site because someone can't see colour.	-2
46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-4
47. Curriculum is not just the plan but the entire experience of the education system.	+1
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+3
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+4
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+2
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	-2
<b>Items ranked at -6</b>	
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all	

**9.10 Appendix 10 - Study analysis Table 4 (SAT4) Table for Q sorts that significantly loaded unto SO Factor 2 (SOF2)**

Statements	Q sorts that significantly loaded unto FACTOR 2 of SO study									
	F2	3P1ICD8X	4DA5LP73	AKZL	KBRR4	TW7Y4	UA9N61	UXQ21T	V28O	Y2M2
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	+4							+6		
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+1									
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-3			-6			+6			
8. Students with VI spend more time overcoming challenges than learning at university.	-2									
9. The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+4		+6							
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4	-6								
11. The right to education is both a human right and an enabler of other human rights.	+4								+6	
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-5								-6	

14. Students with VI should demand their rights at university because the law protects their right to education.	+1				+6				
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+3				+6				
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	-5				-6				
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	+1			-6					
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+5								+6
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4								
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-3		-6						
22. Additional support for students with VI should be catered for on a needs basis.	-1								+6
34. Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.	0			+6					

35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+5		+6							
39. Content of a course site cannot be made accessible because it is discipline specific.	-6	-1	-5	-6, -6	-4	-3	-6, -6	-6, -6	-4	0
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	0					-6				
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all.	-5				-6		-6			
47. Curriculum is not just the plan but the entire experience of the education system.	+1							-6		
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+5			+6				+6		
51. The curriculum at university is mainly designed for able bodied students.	+1									
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+6	+6, +6	+4	+4	+5	+1	+4	+3	+5	+3
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+6	+5	+1	-2	+6, +6	+2	+6, +6	+1	+6, +6	+1

57. Students with VI don't want to compete to be the best student but just want to pass.	-6	-5	-6, -6	-5	-5	0	-5	-1	-6, -6	-6, -6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	+3	+6								
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	-2									-6
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	0	-6			+6					

### 9.11 Appendix 11 - Crib sheet Table 4 (CST4) for staff only Factor 2 (SOF2)

Items ranked at +6	Rank
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	
Items ranked higher in factor 2 array than in factor 1 array	
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	+4
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-3
8. Students with VI spend more time overcoming challenges than learning at university.	-2
9. The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.	+4

10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
14. Students with VI should demand their rights at university because the law protects their right to education.	+1
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	+3
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	+1
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+2
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-3
22. Additional support for students with VI should be catered for on a needs basis.	-1
23. It is important that visually impaired students create a social support system on campus.	+3
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-2
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	0
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	+3
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	0
31. Lack of assistive technology for students with VI at university is discriminatory.	+2
32. University electronic library databases and their resources are generally accessible to students with VI.	-2
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	+5
36. Students with VI have become more excluded in the time of COVID-19.	-1
37. There is little economic benefit for a university in making their course sites accessible.	-4
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+4
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all	-5
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know, using their own abilities as a baseline. They make things that are easy for non-disabled students to use, but difficult for students with VI.	+2



45. It does not make sense to create just a black and white course site because someone can't see colour.	-1
46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	+1
47. Curriculum is not just the plan but the entire experience of the education system.	+1
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+5
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+6
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	+3
<b>Items ranked lower in factor 2 array than in factor 1 array</b>	
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	-3
2. Curriculum design at university lacks implementation of the UNCRPD.	-3
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	+1
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+2
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+2
8. Students with VI spend more time overcoming challenges than learning at university.	-2
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
11. The right to education is both a human right and an enabler of other human rights.	+4
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-5
13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	-2
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	-5
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+5

20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-4
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-2
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	0
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	-1
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	0
31. Lack of assistive technology for students with VI at university is discriminatory.	+2
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	-1
34. Lecturers may lack the skills for providing multiple ways of representation, action and expression and engagement using information technology.	0
39. Content of a course site cannot be made accessible because it is discipline specific.	-6
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	0
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+3
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	+2
47. Curriculum is not just the plan but the entire experience of the education system.	+1
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	-3
50. Challenges to reading and writing for students with VI at university are significant.	-1
51. The curriculum at university is mainly designed for able bodied students.	+1
53. An accessible online curriculum should be part of lecturers' performance appraisal.	0
54. Students with VI take longer to graduate from university.	-4
55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	0
57. Students with VI don't want to compete to be the best student but just want to pass.	-6
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences efforts to make teaching and learning accessible.	-2

60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	0
<b>Items ranked at -6</b>	
39. Content of a course site cannot be made accessible because it is discipline specific.	
57. Students with VI don't want to compete to be the best student but just want to pass.	

### 9.12 Appendix 12 - Factor Array Table 3 (FAT3) for student with VI (SVIO) study factor 1 (SVIOF1)

Statements	F1
1. Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement.	-1
2. Curriculum design at university lacks implementation of the UNCRPD.	-1
3. The right to education depends upon the accessibility of information and communication technologies for students with VI.	-4
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	-1
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4
6. It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, both academic and non-academic staff, to shape organisational culture.	+4
7. Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.	+4
8. Students with VI spend more time overcoming challenges than learning at university.	+2
9. The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+2
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4
11. The right to education is both a human right and an enabler of other human rights.	+1
12. The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.	-3

13. If all the necessary accommodations and supports are in place, then VI would not be disabling in society.	+1
14. Students with VI should demand their rights at university because the law protects their right to education.	0
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.	-1
16. The barriers that students with VI face, and not their impairments, are what cause them to be disabled.	-2
17. It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.	-2
18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+3
19. Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.	+2
20. UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.	-3
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-6
22. Additional support for students with VI should be catered for on a needs basis.	0
23. It is important that visually impaired students create a social support system on campus.	-2
24. Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.	-2
25. Today, there are a variety of on-campus clubs, organisations, sororities and fraternities that welcome participants with visual disabilities.	-5
26. New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.	-1
27. Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.	0
28. Support for students with VI is usually provided at an individual level and not at an institutional level.	0
29. Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.	+1
30. Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.	+1
31. Lack of assistive technology for students with VI at university is discriminatory.	+6
32. University electronic library databases and their resources are generally accessible to students with VI.	-3
33. Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.	+3

34. Lecturers may lack the skills for providing multiple ways of representation, action and expression and engagement using information technology.	0
35. A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.	-2
36. Students with VI have become more excluded in the time of COVID-19.	+3
37. There is little economic benefit for a university in making their course sites accessible.	-3
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+5
39. Content of a course site cannot be made accessible because it is discipline specific.	-5
40. People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.	+2
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+3
42. Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.	-1
43. Making a course site accessible is not worth it when there are so few students with VI and most times none at all	-5
44. Designers in the IT department at the university often generate and evaluate ideas based on what they know, using their own abilities as a baseline. They make things that are easy for non-disabled students to use, but difficult for students with VI.	0
45. It does not make sense to create just a black and white course site because someone can't see colour.	-3
46. Developing course sites costs a lot of money. This makes it hard for universities to want to make their course site accessible unless they are forced to do so.	-2
47. Curriculum is not just the plan but the entire experience of the education system.	+6
48. Learning management systems should adhere to and implement the international web content accessibility guidelines.	+4
49. The online aspect of the curriculum presents more challenges than benefits for students with VI at university.	+4
50. Challenges to reading and writing for students with VI at university are significant.	+5
51. The curriculum at university is mainly designed for able bodied students.	+5
52. A proactive approach is needed to make the curriculum inclusive of students with VIs.	+3
53. An accessible online curriculum should be part of lecturers' performance appraisal.	0
54. Students with VI take longer to graduate from university.	-4

55. As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.	+1
56. Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.	+2
57. Students with VI don't want to compete to be the best student but just want to pass.	-6
58. Often, a major concern for universities to procure accessible information and communication technologies is their high cost.	0
59. There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.	+1
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+2

### 9.13 Appendix 13 - Study analysis Table 5 (SAT5) Table for Q sorts that significantly loaded unto SVIO Factor 1 (SVIOF1)

Statements	Q sorts that significantly loaded unto factor 1 of SVIO study				
	F1	BH8Q	CLVFV	JPJ6	WPSVGL1
4. There is a moral argument for accessibility with respect to the social contract not to leave others behind.	-1				
5. Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.	-4			-6	
8. Students with VI spend more time overcoming challenges than learning at university.	+2				+6
9. The confidence, respect and dignity essential to effective learning are supported by enabling students with VI to be autonomous and in control of their learning.	+2				
10. UCT has acceptable levels of adaptation to accommodate learning of students with VI.	-4				
11. The right to education is both a human right and an enabler of other human rights.	+1				+6
15. A socially fulfilling, intellectually stimulating and economically productive life for students with VI are directly tied to educational success and opportunities.	-1	+6			

18. Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.	+3	+6			
21. UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.	-6	-6, -6	-6, -6	-4	-5
31. Lack of assistive technology for students with VI at university is discriminatory.	+6	+4	+5	+2	+5
38. Automated tools for checking for accessibility in a learning management system do not find every single accessibility problem so human testing is still required.	+5		+6		
39. Content of a course site cannot be made accessible because it is discipline specific.	-5			-6	
41. We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.	+3		-6		
47. Curriculum is not just the plan but the entire experience of the education system.	+6	+4	+6, +6	+4	+3
51. The curriculum at university is mainly designed for able bodied students.	+5			+6	
54. Students with VI take longer to graduate from university.	-4				-6
57. Students with VI don't want to compete to be the best student but just want to pass.	-6	-6, -6	-5	-4	-6, -6
60. Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.	+2			+6	

## 9.14 Appendix 14 – Information sheet

### Information of PhD study for Staff members at UCT

Dear participant,

My name is Ikechukwu Nwanze. I am undertaking doctoral research at the University of Cape Town on VI. I am interested in finding out more about different points of view on how staff and students understand equitable access to the curriculum for students with VI. The results of this study will be used to get an understanding of the challenges that exist in higher education for students with VI. This study does not benefit you directly, but the answers you give together with the answers of all the other people we talk to will be used to find better ways to support students with VI in participating in the curriculum at UCT.

If you agree to participate, you will be asked to rate your views, from strongly agree to strongly disagree on sets of statements according to the instructions given. This will take approximately 30 - 45 minutes to finish but may be less or more. Only the researchers will have access to the information that links you to your answers. The information will be put together with that of other people and no one individual will be identifiable.

The forms that you complete will look at issues related to students with VI. There are no risks to you in participating in this project, nor if you decide not to participate. You will be entitled to withdraw from participating at any time without any need for an explanation, and with no consequences to yourself. If you are uncomfortable about anything arising from the research, you can contact the researcher, Ikechukwu Nwanze or my supervisor Associate Professor. Judith McKenzie (see contacts below).

The information gained from the form that you complete will be entered into a computer and analysed with other results. While these results will identify certain details about yourself e.g., age, gender, educational background, your name will not be divulged. The completed forms will be shredded once the study is completed.



Thank you for your time and participation

**Researcher**

Ikechukwu Nwanze

Student

DHRS

Faculty of Health Sciences

UNIVERSITY OF CAPE TOWN

Tel: +27 21 650 7677

Email: Ikechukwu.nwanze@uct.ac.za

Kevin.murfitt@deakin.edu.au

**Supervisor**

Judith McKenzie

Head of Division

Disability Studies

Faculty of Health Sciences

UNIVERSITY OF CAPE TOWN

Tel: +27 21 406 6593

Email: Judith.Mckenzie@uct.ac.za

**Co-supervisor**

Kevin Murfitt

Senior Lecturer

Disability and Inclusion

Faculty of Health

DEAKIN UNIVERSITY

Tel: +61 3 925 17190

Email:

If you have any questions or concerns about your rights or welfare as a research participant please contact the head of the Faculty of Health Sciences Human Research Ethics Committee, Mark Blockman with contact details below:

**Ethics Committee**

Mark Blockman

Associate Professor Chairperson

Faculty of Health Sciences Human Research Ethics Committee

Tel: +27 21 406 6496

Email: Marc.Blockman@uct.ac.za

## 9.15 Appendix 15 – Informed Consent Form

### Consent Form

**Title of Study:** How do students and staff at the University of Cape Town understand equitable access to the curriculum for students with VIs?

I have been provided with an information sheet explaining the research project and I understand the letter.

I have been given the opportunity to ask questions and all my questions have been answered satisfactorily.

I am aware that I can contact Judith McKenzie or Kevin Murfitt for any further queries, or if I have concerns or complaints, I can contact the HREC. I have been given their contact details in the information sheet.

I understand that participating in this project will involve the following:

Attending a group session where I will be asked to rate my views, from strongly agree to strongly disagree on sets of statements according to the instructions given and a follow up focus group discussion on the ratings I did. The researcher will take notes during the focus group session. My voice will be recorded. I consent to having my voice recorded during this research.

I understand that the researcher will be able to identify me but that all the information I give will be coded, kept confidential and will be accessed only by the researcher, his supervisor and co-supervisor.

I understand that I will not be identified in any report, thesis, or presentation of the results of this research.

I understand that I can withdraw from the research at any time without any penalty.

I freely agree to participate in this project.

\_\_\_\_\_  
Participant's name & signature

\_\_\_\_\_  
Date and place

\_\_\_\_\_  
Researcher's name & signature

\_\_\_\_\_  
Date and place

## 9.16 Appendix 16 – Q Sorting Instructions for Staff Members

Thank you for agreeing to take part in my Q methodology research study. Please read the instructions carefully before proceeding.

### Instructions

N/B: Please remember that you are allowed at any time to withdraw from the study without any prejudice.

1. You will have first read and accepted the consent form to participate in this study.
2. You will then have completed a demographics survey which will be used for analysis but in no way linked to you when the thesis is written up.
3. You will then be presented with a "[How to complete a Q sort YouTube video tutorial](https://www.youtube.com/watch?v=zgT2N4zcPtQ&feature=youtu.be)" (<https://www.youtube.com/watch?v=zgT2N4zcPtQ&feature=youtu.be>) that explains how to do Q sorting so that you get a better understanding.
4. Next you will pre-sort 60 statements into three categories. You do this by choosing the thumbs down for statements you most disagree with, a question mark for statements you feel neutral about, have mixed feelings about or not sure about and a thumbs up for statements you most agree with. Each statement offers a different answer to the research question.
5. You will now have 3 categories of statements to place in a response grid. The Q sorting task requires you to allocate every one of the statements a ranking position within the response grid provided, based on the strength of your agreement/disagreement with the statement. The more you agree with a statement, the higher the ranking you are likely to award it. The more you disagree, the lower the ranking.
6. Statements you place towards the left of the grid would be from statements you most disagree. Statements you place towards the middle would be statements you feel neutral about and statements you place towards the right would be statements you mostly agree with.
7. You will notice that you can only place two statements in the -6 grid. This would be two statements you disagree with the strongest while the two statements you place in the +6 grid would be statements you agree with the strongest. For -5 grid, you can only place 3 statements you also strongly disagree with and in the +5 grid, statements you strongly agree with and so on.
8. Don't get hung up on the ranking of specific statements. If you find there are four statements you feel belong to -5 for example and you know -5 can only take three statements, then just read all four statements again and place the three you feel more strongly about and the fourth one to a

lesser ranking. I just want to get a general sense of what you agree with and what you disagree with and I promise this will happen whichever one you relegate.

9. Don't worry if your agree statements cross over into the negative rankings. I won't be assuming that this means you disagree with the statement. The ranking in Q methodology is relative. When you assign a statement to -4 ranking for instance, this therefore indicates only that you probably disagree with that statement less than the statement you ranked -5 but more than the statement you ranked -3. That is all.
10. The order in which statements appear in a particular column or under a particular ranking value is irrelevant.
11. So, continue dragging and placing the statements in the grid till all 60 statements have been assigned to the grid.
12. After you are done, look at the placement of your statements and see if there are any statements you would like to move to a different grid. If so, please go ahead and change it.
13. Once you are satisfied, then click on the submit button.
14. Finally, you will just complete a survey where I ask you a few questions which are:
  1. Why you place the 2 statements in the most agree slots (+6 column) and why you placed the 2 statements in the most disagree slots (-6 column)?
  2. After this exercise, how do you understand the rights of students with VI to have equitable access to higher education?
15. Congratulations you have finished the Q sorting exercises and thank you immensely for your time.
16. If there are statements you feel have been omitted by the study and need to be included, please let me know.

## 9.17 Appendix 17 – Q Sorting instructions for Students with VI

### Procedure for Students with VI for completing the Q sorting

**Name:**

**Age range** (Type yes to the range you choose):

1. 18 – 24
2. 25 – 32
3. 32 – 39
4. 40 – 49
5. 50 – 59
6. 60 – 75

**Gender:**

1. Male
2. Female
3. Prefer not to say

**Verbal Instructions and steps to work with participants.**

1. Process: Thank you for agreeing to take part in my Q methodological study. I will be guiding you through the process by verbalising actions you need to take to complete the Q sorting.
2. N/B: Ask participant for consent to audio record the Q sorting process as indicated in the consent form.
3. N/B: If participant did not reply, ask to confirm that before we start by reading both consent form and information sheet again to participant.
4. N/B: If participant did not reply to email about demographics ask them now.

5. Process: Participation in this study requires you the participant to listen to 60 statements am going to read out and first of all group them into three categories: Most Agree, Neutral/indifferent/unsure or have mixed feelings about, and Most Disagree.
6. N/B: Pre-sorting. I read all statements to participant till all are placed into one of the 3 categories.
7. Process: Then the next step is to now rank the statements by placing them into a response grid.
8. N/B: Inform participant: I will physically place the cards in the response grid based on their feedback.
9. Process: The response grid contains 60 slots for the 60 statements. Slots towards the right will contain statements you mostly agree with, slots to the middle are for statements you may be neutral/indifferent/unsure or have mixed feelings about and statements to the left would be statements you most disagree with.
10. Each slot has a fixed number of statements that they can take and they are:
  - a. -6 and +6 can only take 2 statement each
  - b. -5 and + 5 can only take 3 statements each
  - c. -4 and +4 can only take 4 statements each
  - d. -3 and +3 can only take 5 statements each
  - e. -2 and +2 can only take 6 statements each
  - f. -1 and +1 can take 6 statements each
  - g. 0 can take 8 statements
11. Out of the statements that you agree with can you choose 2 that you most agree with – I will read them out for you. Now out of the ones that are left in the agree pile I want you to choose the next 3 that you most agree with and then the next 4 that you most agree with and then the next 5 and then the next 6 you most agree with.
12. Out of the statements that you disagree with can you choose 2 that you most disagree with – I will read them out for you. Now out of the ones that are left in the disagree pile I want you to choose the next 3 that you most disagree with and then the next 4 that you most disagree with and then the next 5 and then the next 6 you most disagree with.

13. Then when these are finished move to the neutral pile and you can start either with the ones you most or least disagree with.
14. Lastly, I will read each statement back to you and indicate in which grid they are to see if you still agree that they should be there. I will start with most agree, then most disagree then neutral.
15. N/B: So, this means participants get to hear all statements 3 times.
16. And we are done with the Q sorting.
17. Now I will just ask you a few questions about why you placed a few statements where you did.
  - a. Why did you place these 2 statements in the most agree slots? read them again
  - b. Why did you place the 2 statements in the most disagree slots? as above
  - c. After this exercise, how do you understand the rights of students with VI to have equitable access to higher education?
  - d. Did you find this process accessible? Any areas for improvement?

## 9.18 Appendix 18: Question for Staff Focus Group Discussion

1. First Findings revealed that it seems effort for an accessible curriculum is not necessarily aligned or of the same priority as research outputs and promotion for staff. Question: Can you speak more about balancing the need for academic promotion and research with the need to make your curriculum accessible? – Linked to factors that influence the enacted curriculum and maybe the hidden curriculum.
2. Question: Linked to the first finding about balance between research output, promotion, accessible curriculum. How can HEI prioritise all of these? – Enacted and Hidden curriculum.
3. Second finding was that increasing workload, additional time makes going the extra mile in designing universal participation difficult. Question: Are there additional things or factors that motivate you to go the extra mile in what you do? Either in making the curriculum accessible or making the university services and facilities accessible? – Linked to support for academics in enacted and hidden curriculum. Also linked to meeting the goals of UNCRPD and support for UDL practices.
4. Third finding was that SVI should be catered for on a needs basis. Question: To your mind, which do you think is more effective: Meeting SVI needs on individual basis or on institutional basis (i.e., building access and universal design into curriculum, all systems and processes), or both? – Linked to UNCRPD and any UDL practices that meets the objectives of UNCRPD
5. Fourth finding was that we may or may not have aspects that serve as a baseline to start the design of an accessible curriculum or technology. Question: In what aspects of the curriculum, technology at HEI, teaching and learning methods and support do you feel progress has been made to accommodate SVI at HEI as these may serve as baseline to work from? – Lined to Enacted and Hidden curriculum – Linked to Digital literacies. Also how does it satisfy the Enacted and hidden curriculum?
6. Fifth finding says that it seems there is a difference between economic benefit of a university and economic benefit for the society. That when a university strives towards its own economic benefit, this may not be compatible with economic benefit for the



- society. Question: Which should be more valuable, economic benefit of a university, economic benefit for the individual or economic benefit for the society? - UNCRPD
7. Linked to the previous finding. Question: Should they be areas where economic benefit of a university is greater than the human right of a SVI? If they are, what can be done to safeguard the human right of a SVI? – UNCRPD. UDL.
  8. Sixth finding was that a problem with university is that the ability to read and write is associated with intelligence and if you cannot, do so, it is usually perceived that you are not smart enough. Question: What factors need to be considered to support you to continue to develop other ways of teaching and learning in addition to reading and writing? – Digital literacies. UDL
  9. Seventh finding revealed that it seems the right for SVI is more of an aspiration rather than an experience because SVI seem to be fighting for the right to gain a right to education. Question: What can support moving from an aspiration of right to education to an experience of right to education for SVI? - UNCRPD.
  10. Eight finding revealed that there is a hidden anxiety about teaching SVI which unconsciously influences effort to make teaching and learning accessible. Question: Can you speak to any anxiety you may have as a staff member catering to an SVI. So, as long as your work involves students, think if a couple of them SVI are. Any anxieties and why? - Hidden Curriculum. Digital literacies

## 9.19 Appendix 19 - Questions for Students with VI Focus Group Discussion

1. The first finding was that there is a lot more that develops a student at university apart from the curriculum. Areas such as the social part, other skills, attributes and factors. Question: Apart from academic and social aspects students need at university, what other factors do you think need to be considered in the curriculum for SVI to have full experience of the curriculum? – Digital literacies, UDL.
2. The second finding was that SVI are not seen as contributing members of society and as such may be one of the reasons for a lack of serious effort to give SVI full participation in the curriculum. Question: What to you constitutes full participation of SVI in the curriculum? - UNCRPD. Enacted and hidden curriculum.
3. The third finding was that there seems to be a lack of understanding that learning today is not restricted to universities alone and as such lack of skills for SVI to learn in other contexts like other students do negatively affect their success at university. Question: What kind of learning opportunities exists for you at home, work and social gatherings?

## 9.20 Appendix 20 – Participant demographics

No	Pseudonym	Age Range	Gender	Job Title	Job Role
1	Zanele	50-59	Female	Student	Student
2	Samantha	25-32	Female	Student	Student
3	Natalie	32-39	Female	Student	Student
4	Marie	32-39	Female	Student	Student
5	Jenny	32-39	Female	Student	Student
6	Elizabeth	40-49	Female	Manager DS	Manager
7	Felicia	40-49	Female	Student	Student
8	Cecilia	32-39	Female	ICTS	Systems Analyst
9	Thulani	32-39	Male	Student	Student
10	Bobby	25-32	Male	Student	Student
11	Janet	50-59	Male	Specialist DS	DDS
12	Olivia	60-75	Female	Student	Student
13	Liam	50-59	Male	Executive Director ICTS	Central ICTS Services
14	Emma	40-49	Female	Acting Director	Teaching and Learning
15	Bean	50-59	Male	Systems Manager	Manage systems analysts
16	Amelia	32-39	Female	Online learning designer	Curriculum design
17	Sophia	50-59	Female	Lecturer	Teaching
18	Noah	40-49	Male	Systems Analyst	Quality of UCT systems
19	Mia	32-39	Female	Learning Technologies	Managing learning technologies
20	Isabella	32-39	Female	Learning Designer	Couse design
21	Evelyn	32-39	Female	Lecturer	Lecturer
22	Luna	32-39	Female	Lecturer	Lecturer
23	Camila	40-49	Female	Lecturer	Lecturer
24	Emily	50-59	Female	Lecturer	Lecturer
25	Nora	60-75	Female	Liberian	Reference and collections
26	Lily	32-39	Female	Advocate DS	DS specialist
27	Oliver	50-59	Male	Principal Liberian	Manage Library teams
28	Grace	60-75	Female	Liberian	Library services
29	Stella	40-49	Female	Liberian	Scholarly communication
30	Henry	40-49	Male	Director Systems Division	Lead systems division
31	Jackson	40-49	Male	Liberian	Principal librarian
32	Victoria	25-32	Female	DS staff	Built environment DS
33	Michael	25-32	Male	Liberian	Science and Engineering
34	Naomi	50-59	Female	CHED course designer	Online learning designer
35	Maya	60-75	Female	Liberian	Junior librarian
36	Thuso	40-49	Female	Liberian	Information services
37	John	40-49	Male	DS admin assistant	Front office

## 9.21 Appendix 21 Ethical Clearance from the University of Cape Town

---



**UNIVERSITY OF CAPE TOWN**  
**Faculty of Health Sciences**  
**Human Research Ethics Committee**



Room G50- Old Main Building  
Grootes Schuur Hospital  
Observatory 7925  
Telephone [021] 406 6492  
Email: [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za)

Website: [www.health.uct.ac.za/fhs/research/humanethics/forms](http://www.health.uct.ac.za/fhs/research/humanethics/forms)

---

13 January 2021

**HREC REF: 655/2020**

**A/Prof J McKenzie**  
Division of Disability Studies  
F-45, OMB  
Email: [judith.mckenzie@uct.ac.za](mailto:judith.mckenzie@uct.ac.za)  
Student: [NWNKIE001@myuct.ac.za](mailto:NWNKIE001@myuct.ac.za)

Dear A/Prof McKenzie

**PROJECT TITLE: HOW DO STUDENTS AND STAFF AT THE UNIVERSITY OF CAPE TOWN UNDERSTAND EQUITABLE ACCESS TO THE UNDERGRADUATE CURRICULUM FOR STUDENTS WITH VISUAL IMPAIRMENT-PHD CANDIDATE-MR IKECHUKWU NWANZE**

Thank you for your response letter, addressing the issues raised by the Faculty of Health Sciences Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

**This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19, dated 17 March 2020 & 06 July 2020.**

**Approval is granted for one year until the 30 January 2022.**

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: [www.health.uct.ac.za/fhs/research/humanethics/forms](http://www.health.uct.ac.za/fhs/research/humanethics/forms))

***The HREC acknowledge that the student: Mr Ikechukwu Nwanze will also be involved in this study.***

**Please quote the HREC REF in all your correspondence.**

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

HREC/REF 655/2020sa

---

## 9.22 Appendix 22 Ethical Clearance from the University of Cape Town for staff

HR194	<b>ACCESS TO UCT STAFF FOR RESEARCH PURPOSES</b>	 <b>UNIVERSITY OF CAPE TOWN</b> IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD
-------	--	---

### NOTES

- Forms must be downloaded from the UCT website: <http://www.uct.ac.za/depts/sapweb/forms/forms.htm>
- This form must be completed by applicants who are requesting to access UCT staff for the purpose of research.
- A copy of the research proposal as well as the Ethics Committee approval must be attached.
- It is the responsibility of the researcher/s to apply for ethical clearance from the relevant Faculty's Research in Ethics Committee (RIEC).
- If you are requesting staff information, you are required to complete the [HR Information Request Form](#) (HR190) and submit it together with all the required documentation.
- The turnaround time for a reply is **approximately 10 working days unless specified as urgent**.
- Return the completed application form and all the above documentation to Joy Henry via email: [joy.henry@uct.ac.za](mailto:joy.henry@uct.ac.za); or deliver to: For the Attention: Executive Director, Human Resources Department, Bremner Building, Room 214, Lower Campus, UCT.

### SECTION A: APPLICANT DETAILS

Title	Mr	Name	Ikechukwu Nwanze
Telephone number	0769684789	Email address	Ikechukwu.Nwanze@uct.ac.za
Student number	NWNIKE001	Staff number	01431947
Visiting researcher ID / passport number	A08681951		
Faculty Officer contact details	Adri Winckler. Email: <a href="mailto:Adri.Winckler@uct.ac.za">Adri.Winckler@uct.ac.za</a> . Tel: 021 406 6327		
	Dianne Pryce. Email: <a href="mailto:Dianne.Pryce@uct.ac.za">Dianne.Pryce@uct.ac.za</a> . Tel: 021 406 6809		
University or institution at which employed or a registered student	University of Cape Town		
Faculty or department in which you are registered or work	Department of Health and Rehabilitation Sciences		
Address (if not UCT)			

### SECTION B: SUPERVISOR DETAILS

	Title and name	Telephone number	Email address
Supervisor	Associate Professor Judith McKenzie	021 406 6318	Judith.McKenzie@uct.ac.za
Co-Supervisor	Dr. Kevin Murfitt	+61 3 925 17190	Kevin.murfitt@deakin.edu.au

### SECTION C: APPLICANT'S FIELD OF STUDY (if applicable) / TITLE OF RESEARCH PROJECT / STUDY

Degree	PhD in Disability Studies		
Research project or title	How do students and staff at the University of Cape Town understand equitable access to the undergraduate curriculum for students with visual impairment		
Research proposal attached	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Target population (number of UCT staff)	25		
Amount of time required for an interview and/or questionnaire	1hour 30 mins		
Lead Researcher details	Associate Professor Judith McKenzie		
Proof of ethical clearance status attached	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

### SECTION D: FOR OFFICE USE (Approval status to be completed by the Executive Director, Human Resources or Nominee)

Support or approval	Role	Signature	Date
Supported?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Joy Henry (Office Co-Ordinator)	29.03.2021
Approved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Miriam Hoosain (Executive Director: HR)	29.03.2021

From: Miriam Hoosain <[miriam.hoosain@uct.ac.za](mailto:miriam.hoosain@uct.ac.za)>  
 Sent: Monday, 29 March 2021 21:31  
 To: Joy Henry <[joy.henry@uct.ac.za](mailto:joy.henry@uct.ac.za)>  
 Subject: RE: Request for permission to UCT staff for PhD study (Ikechukwu Nwanze)

Thanks Joy. Hereby approved.  
 Best

Miriam Hoosain

15 November 2011

Page 1 of 1

HR194

## 9.23 Appendix 23 Ethical Clearance from the University of Cape Town for students with VI

	<b>RESEARCH ACCESS TO STUDENTS</b>	<b>DSA 100</b>
---	------------------------------------	----------------

### NOTES

- This form must be **FULLY** completed by all applicants who want to access UCT students for the purpose of research or surveys.
- Return the fully completed (a) **DSA 100** application form by email, in the same word format, together with your: (b) **research proposal inclusive of your survey**, (c) **copy of your ethics approval letter / proof** (d) **informed consent letter** to: [Nadierah.Pienaar@uct.ac.za](mailto:Nadierah.Pienaar@uct.ac.za). Your application will be attended to by the Executive Director, Department of Student Affairs (DSA), UCT.
- The turnaround time for a reply is **approximately 10 working days**.
- NB: It is the responsibility of the researcher/s to apply for and to obtain **ethics approval and to comply with amendments that may be requested**; as well as to obtain approval to access UCT staff and/or UCT students, from the following, at UCT, respectively: (a) **Ethics**: Chairperson, Faculty Research Ethics Committee' (FREC) for ethics approval, (b) **Staff access**: Executive Director: HR for approval to access UCT staff, and (c) **Student access**: Executive Director: Student Affairs for approval to access UCT students.
- Note**: UCT Senate Research Protocols requires compliance to the above, **even if prior approval has been obtained from any other institution/agency**. UCT's research protocol requirements applies to **all persons, institutions and agencies from UCT and external to UCT** who want to conduct research on human subjects for academic, marketing or service related reasons at UCT.
- Should approval be granted to access UCT students for this research study, such approval is effective for a period of one year from the date of approval (as stated in Section D of this form), and the approval expires automatically on the last day.
- The approving authority reserves the right to revoke an approval based on reasonable grounds and/or new information.

### SECTION A: RESEARCH APPLICANT/S DETAILS

Position	Staff / Student No	Title and Name	Contact Details (Email / Cell / land line)
A.1 Student Number	NWNIKE001	Mr. Ikechukwu Nwanze	<a href="mailto:Ikechukwu.Nwanze@uct.ac.za">Ikechukwu.Nwanze@uct.ac.za</a>
A.2 Academic / PASS Staff No.	01431947		
A.3 Visitor/ Researcher ID No.			
A.4 University at which a student or employee	UCT	Address if <u>not</u> UCT:	
A.5 Faculty/ Department/School	Faculty of Health Sciences/Department of Health and Rehabilitation Sciences		
A.6 APPLICANTS DETAILS If different from above	Title and Name	Tel.	Email

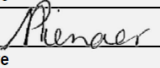

### SECTION B: RESEARCHER/S SUPERVISOR/S DETAILS

Position	Title and Name	Tel.	Email
B.1 Supervisor	Associate Professor Judith McKenzie	021 406 6318	<a href="mailto:Judith.McKenzie@uct.ac.za">Judith.McKenzie@uct.ac.za</a>
B.2 Co-Supervisor/s	Dr. Kevin Murfitt	+61 3 925 17190	<a href="mailto:kevin.murfitt@deakin.edu.au">kevin.murfitt@deakin.edu.au</a>

### SECTION C: APPLICANT'S RESEARCH STUDY FIELD AND APPROVAL STATUS

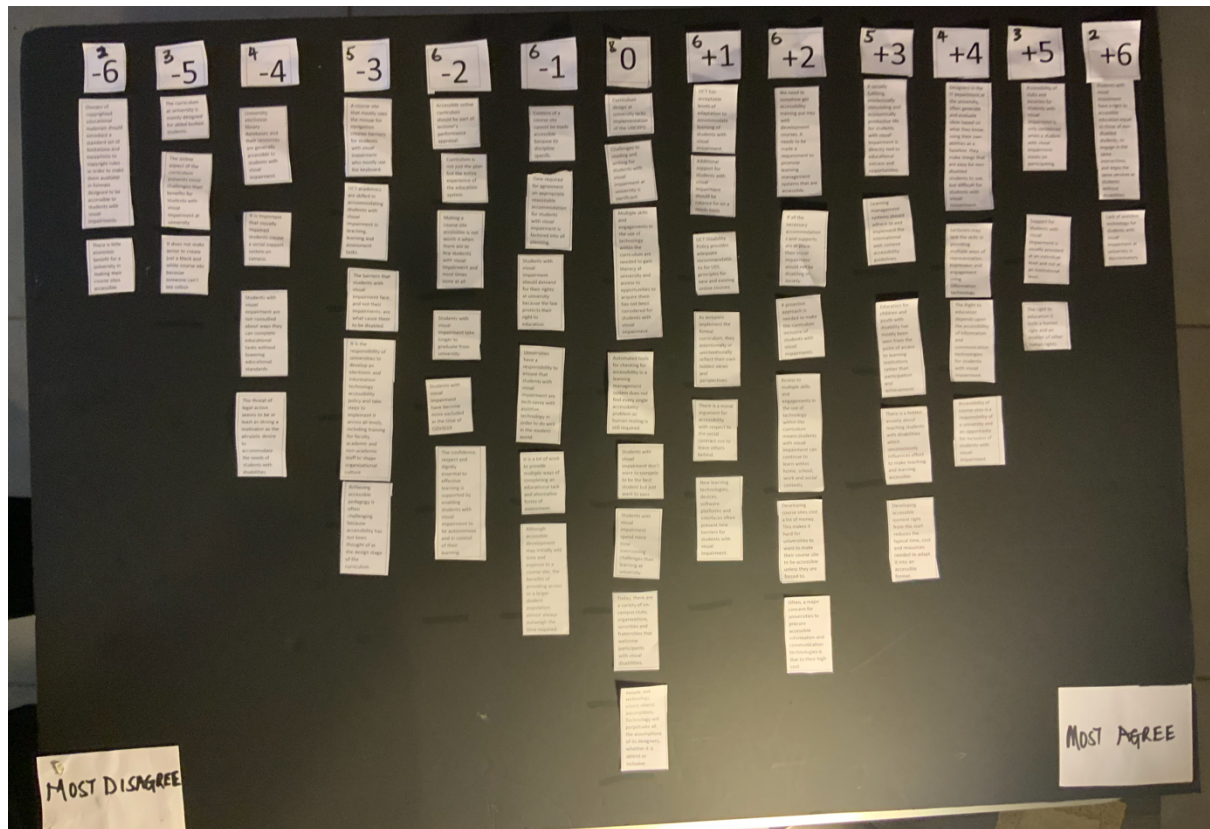
C.1 Degree – if applicable	PhD in Disability Studies
C.2 Research Project Title	How do students and staff at the University of Cape Town understand equitable access to the undergraduate curriculum for students with visual impairment
C.3 Research Proposal	Attached: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
C.4 Target population	Undergraduate and postgraduate students with visual impairment at UCT
C.5 Lead Researcher details	If different from applicant: 01413575 Associate Professor Judith McKenzie, 021 406 6318, <a href="mailto:Judith.McKenzie@uct.ac.za">Judith.McKenzie@uct.ac.za</a>
C.6. Will use research assistant/s	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes- provide a list of names, contact details:
C.7 Research Methodology and Informed consent	Research methodology: Q methodology using both qualitative and quantitative methods in focus groups Informed consent: Yes, advised for full consent for participation.
C.8 Ethics clearance status from UCT's Faculty Ethics in Research Committee /Chair (EIRC)	Approved by the UCT EIRC: Yes <input checked="" type="checkbox"/> With amendments: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (a) Attach copy of your UCT ethics approval. Attached: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (b) State date / Ref. No / Faculty of your UCT ethics approval: 13/01/2021 Ref. / Faculty: 655/2020

### SECTION D: APPLICANT/S APPROVAL STATUS FOR ACCESS TO STUDENTS FOR RESEARCH PURPOSE (To be completed by the ED, DSA or NOMINEE)

D.1 APPROVAL STATUS	Approved / With Terms / Not	* Conditional approval with terms		Applicant/s Ref. No.:
	(i) Approved <input checked="" type="checkbox"/> (ii) With terms <input type="checkbox"/> (iii) Not approved <input type="checkbox"/>	a) Access to students for this research study must only be undertaken <u>after</u> written ethics approval has been obtained. b) In event any ethics conditions are attached, these must be complied with <u>before</u> access to students.		NWNIKE001/01431947 / Mr Ikechukwu Nwanze
D.2 PREPARED BY:	Designation	Name	Signature	Date of Approval
	Personal Assistant	Nadierah Pienaar		26/05/2021
D.3 APPROVED BY:	Designation	Name	Signature	Date of Approval
	Executive Director Department of Student Affairs	Mr Pura Mgolombane		27/05/2021

## 9.24 Appendix 24 Physical distribution grid with statements

Figure 3: Physical distribution grid with statements



## 9.25 Appendix 25 Consensus statements for all participant factor 1 (APF1) and factor 2 (APF2)

No	Statement APF1
18	Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.
52	A proactive approach is needed to make the curriculum inclusive of students with VIs.
40	People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.
38	Automated tools for checking for accessibility in a learning management system does not find every single accessibility problem so human testing is still required.
16	The barriers that students with VI face, and not their impairments, are what cause them to be disabled.
29	Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.
26	New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.
58	Often, a major concern for universities to procure accessible information and communication technologies is due to their high cost.
8	Students with VI spend more time overcoming challenges than learning at university.
45	It does not make sense to create just a black and white course site because someone can't see colour.
46	Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site to be accessible unless they are forced to.
25	Today, there are a variety of on-campus clubs, organizations, sororities and fraternities that welcome participants with visual disabilities.
20	UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.
10	UCT has acceptable levels of adaptation to accommodate learning of students with VI.



No	Statement APF1
5	Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.
37	There is little economic benefit for a university in making their course sites accessible.
21	UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.
39	Content of a course site cannot be made accessible because its discipline specific.
43	Making a course site accessible is not worth it when there are so few students with VI and most times none at all

No	Statement APF2
18	Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.
52	A proactive approach is needed to make the curriculum inclusive of students with VIs.
38	Automated tools for checking for accessibility in a learning management system does not find every single accessibility problem so human testing is still required.
40	People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.
29	Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.
26	New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.
16	The barriers that students with VI face, and not their impairments, are what cause them to be disabled.
58	Often, a major concern for universities to procure accessible information and communication technologies is due to their high cost.
8	Students with VI spend more time overcoming challenges than learning at university.

No	Statement APF2
45	It does not make sense to create just a black and white course site because someone can't see colour.
46	Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site to be accessible unless they are forced to.
25	Today, there are a variety of on-campus clubs, organizations, sororities and fraternities that welcome participants with visual disabilities.
10	UCT has acceptable levels of adaptation to accommodate learning of students with VI.
20	UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.
5	Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.
21	UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.
37	There is little economic benefit for a university in making their course sites accessible.
39	Content of a course site cannot be made accessible because its discipline specific.
43	Making a course site accessible is not worth it when there are so few students with VI and most times none at all

## 9.26 Appendix 26 Consensus statements for staff only factor 1 (SOF1) and factor 2 (SOF2)

No	Statement SOF1
18	Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.
41	We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.
11	The right to education is both a human right and an enabler of other human rights.
31	Lack of assistive technology for students with VI at university is discriminatory.
19	Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.
44	Designers in the IT department at the university, often generate and evaluate ideas based on what they know, using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.
47	Curriculum is not just the plan but the entire experience of the education system.
33	Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.
30	Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.
50	Challenges to reading and writing for students with VI at university is significant.
26	New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.
28	Support for students with VI is usually provided at an individual level and not at an institutional level.
24	Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.
8	Students with VI spend more time overcoming challenges than learning at university.

No	Statement SOF1
45	It does not make sense to create just a black and white course site because someone can't see colour.
36	Students with VI have become more excluded in the time of COVID19
22	Additional support for students with VI should be catered for on a needs basis.
20	UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.
25	Today, there are a variety of on-campus clubs, organizations, sororities and fraternities that welcome participants with visual disabilities.
10	UCT has acceptable levels of adaptation to accommodate learning of students with VI.
39	Content of a course site cannot be made accessible because its discipline specific.

No	Statement SOF2
18	Students with VI have a right to accessible education equal to those of non-disabled students, to engage in the same interactions, and enjoy the same services as students without disabilities.
11	The right to education is both a human right and an enabler of other human rights.
41	We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.
19	Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.
44	Designers in the IT department at the university, often generate and evaluate ideas based on what they know, using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.
31	Lack of assistive technology for students with VI at university is discriminatory.
47	Curriculum is not just the plan but the entire experience of the education system.

No	Statement SOF2
30	Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.
28	Support for students with VI is usually provided at an individual level and not at an institutional level.
26	New learning technologies, devices, software platforms and interfaces often present new barriers for students with VI.
50	Challenges to reading and writing for students with VI at university is significant.
33	Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.
45	It does not make sense to create just a black and white course site because someone can't see colour.
36	Students with VI have become more excluded in the time of COVID19
22	Additional support for students with VI should be catered for on a needs basis.
24	Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.
8	Students with VI spend more time overcoming challenges than learning at university.
25	Today, there are a variety of on-campus clubs, organizations, sororities and fraternities that welcome participants with visual disabilities.
20	UCT Disability Policy provides adequate recommendations for UDL principles for new and existing online courses.
10	UCT has acceptable levels of adaptation to accommodate learning of students with VI.
39	Content of a course site cannot be made accessible because its discipline specific.

**9.27 Appendix 27 Distinguishing statements for all participant factor 1 (APF1) and factor 2 (APF2)**

No	Statement APF1
60	Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.
51	The curriculum at university is mainly designed for abled bodied students.
41	We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.
48	Learning management systems should adhere to and implement the international web content accessibility guidelines.
56	Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.
31	Lack of assistive technology for students with VI at university is discriminatory.
59	There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.
55	As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.
53	Accessible online curriculum should be part of lecturer's performance appraisal.
42	Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.
47	Curriculum is not just the plan but the entire experience of the education system.
34	Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.
11	The right to education is both a human right and an enabler of other human rights.
44	Designers in the IT department at the university, often generate and evaluate ideas based on what they know, using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.

No	Statement APF1
7	Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.
6	It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, academic and non-academic staff to shape organizational culture.
30	Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.
50	Challenges to reading and writing for students with VI at university is significant.
33	Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.
9	The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.
49	The online aspect of the curriculum presents more challenges than benefits for students with VI at university.
35	A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.
4	There is a moral argument for accessibility with respect to the social contract not to leave others behind.
19	Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.
27	Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.
15	A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.
36	Students with VI have become more excluded in the time of COVID19
28	Support for students with VI is usually provided at an individual level and not at an institutional level.
14	Students with VI should demand for their rights at university because the law protects their right to education.

No	Statement APF1
1	Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement
24	Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.
23	It is important that visually impaired students create a social support system on campus.
2	Curriculum design at university lacks implementation of the United Nations Convention on the Rights of Persons with Disabilities.
13	If all the necessary accommodations and supports are in place, then VI would not be disabling in society.
12	The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.
54	Students with VI take longer to graduate from university.
22	Additional support for students with VI should be catered for on a needs basis.
3	The Right to education depends upon the accessibility of information and communication technologies for students with VI.
17	It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.
32	University electronic library databases and their resources are generally accessible to students with VI.
57	Students with VI don't want to compete to be the best student but just want to pass.

No	Statement APF2
11	The right to education is both a human right and an enabler of other human rights.
7	Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.
19	Achieving accessible pedagogy is often challenging because accessibility has not been thought of at the design stage of the curriculum.



No	Statement APF2
9	The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.
6	It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, academic and non-academic staff to shape organizational culture.
3	The Right to education depends upon the accessibility of information and communication technologies for students with VI.
4	There is a moral argument for accessibility with respect to the social contract not to leave others behind.
14	Students with VI should demand for their rights at university because the law protects their right to education.
15	A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.
41	We need to somehow get accessibility training put into web development courses. It needs to be made a requirement to promote learning management systems that are accessible.
48	Learning management systems should adhere to and implement the international web content accessibility guidelines.
35	A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.
13	If all the necessary accommodations and supports are in place, then VI would not be disabling in society.
28	Support for students with VI is usually provided at an individual level and not at an institutional level.
60	Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.
31	Lack of assistive technology for students with VI at university is discriminatory.
23	It is important that visually impaired students create a social support system on campus.
1	Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement

No	Statement APF2
56	Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.
51	The curriculum at university is mainly designed for abled bodied students.
34	Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.
17	It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.
42	Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.
2	Curriculum design at university lacks implementation of the United Nations Convention on the Rights of Persons with Disabilities.
44	Designers in the IT department at the university, often generate and evaluate ideas based on what they know, using their own abilities as a baseline, they make things that are easy for non-disabled students to use, but difficult for students with VI.
50	Challenges to reading and writing for students with VI at university is significant.
55	As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.
24	Accessibility of clubs and societies for students with VI is only considered when a student with VI insists on participating.
22	Additional support for students with VI should be catered for on a needs basis.
47	Curriculum is not just the plan but the entire experience of the education system.
53	Accessible online curriculum should be part of lecturer's performance appraisal.
30	Universities have a responsibility to ensure that students with VI are tech-savvy with assistive technology in order to do well in the modern world.
59	There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.

No	Statement APF2
33	Students with VI are not consulted about ways they can complete educational tasks without lowering educational standards.
27	Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.
36	Students with VI have become more excluded in the time of COVID19
12	The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.
54	Students with VI take longer to graduate from university.
49	The online aspect of the curriculum presents more challenges than benefits for students with VI at university.
32	University electronic library databases and their resources are generally accessible to students with VI.
57	Students with VI don't want to compete to be the best student but just want to pass.

## 9.28 Appendix 28 Distinguishing statements for staff only factor 1 (SOF1) and factor 2 (SOF2)

No	Statement SOF1
60	Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.
51	The curriculum at university is mainly designed for abled bodied students.
7	Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.
52	A proactive approach is needed to make the curriculum inclusive of students with VIs.
6	It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, academic and non-academic staff to shape organizational culture.
55	As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.
40	People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.
53	Accessible online curriculum should be part of lecturer's performance appraisal.
48	Learning management systems should adhere to and implement the international web content accessibility guidelines.
42	Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.
16	The barriers that students with VI face, and not their impairments, are what cause them to be disabled.
34	Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.
56	Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.
4	There is a moral argument for accessibility with respect to the social contract not to leave others behind.

No	Statement SOF1
59	There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.
9	The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.
38	Automated tools for checking for accessibility in a learning management system does not find every single accessibility problem so human testing is still required.
35	A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.
15	A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.
27	Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.
13	If all the necessary accommodations and supports are in place, then VI would not be disabling in society.
1	Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement
2	Curriculum design at university lacks implementation of the United Nations Convention on the Rights of Persons with Disabilities.
49	The online aspect of the curriculum presents more challenges than benefits for students with VI at university.
14	Students with VI should demand for their rights at university because the law protects their right to education.
23	It is important that visually impaired students create a social support system on campus.
29	Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.
12	The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.
58	Often, a major concern for universities to procure accessible information and communication technologies is due to their high cost.
54	Students with VI take longer to graduate from university.

No	Statement SOF1
3	The Right to education depends upon the accessibility of information and communication technologies for students with VI.
17	It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.
46	Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site to be accessible unless they are forced to.
32	University electronic library databases and their resources are generally accessible to students with VI.
5	Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.
57	Students with VI don't want to compete to be the best student but just want to pass.
37	There is little economic benefit for a university in making their course sites accessible.
21	UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.
43	Making a course site accessible is not worth it when there are so few students with VI and most times none at all

No	Statement SOF2
52	A proactive approach is needed to make the curriculum inclusive of students with VIs.
56	Owners of copyrighted educational materials should introduce a standard set of limitations and exceptions to copyright rules in order to make them available in formats designed to be accessible to students with VIs.
48	Learning management systems should adhere to and implement the international web content accessibility guidelines.
35	A course site that mostly uses the mouse for navigation creates barriers for students with VI who mostly use the keyboard.
38	Automated tools for checking for accessibility in a learning management system does not find every single accessibility problem so human testing is still required.

No	Statement SOF2
9	The confidence, respect and dignity essential to effective learning is supported by enabling students with VI to be autonomous and in control of their learning.
3	The Right to education depends upon the accessibility of information and communication technologies for students with VI.
29	Access to multiple skills and engagements in the use of technology within the curriculum means students with VI can continue to learn within home, school, work and social contexts.
23	It is important that visually impaired students create a social support system on campus.
15	A socially fulfilling, intellectually stimulating and economically productive life for students with VI is directly tied to educational success and opportunities.
58	Often, a major concern for universities to procure accessible information and communication technologies is due to their high cost.
7	Accessibility of course sites is a responsibility of a university and an opportunity for inclusion of students with VI.
42	Although accessible development may initially add time and expense to a course site, the benefits of providing access to a larger student population almost always outweigh the time required.
6	It is the responsibility of universities to develop an electronic and information technology accessibility policy and take steps to implement it across all levels, including training for faculty, academic and non-academic staff to shape organizational culture.
14	Students with VI should demand for their rights at university because the law protects their right to education.
51	The curriculum at university is mainly designed for abled bodied students.
4	There is a moral argument for accessibility with respect to the social contract not to leave others behind.
46	Developing course sites cost a lot of money. This makes it hard for universities to want to make their course site to be accessible unless they are forced to.
17	It is a lot of work to provide multiple ways of completing an educational task and alternative forms of assessment.
40	People, not technology, create ableist assumptions. Technology will perpetuate all the assumptions of its designers, whether it is ableist or inclusive.

No	Statement SOF2
55	As lecturers implement the formal curriculum, they intentionally or unintentionally reflect their own hidden views and perspectives.
60	Developing accessible content right from the start reduces the typical time, cost and resources needed to adapt it into an accessible format.
53	Accessible online curriculum should be part of lecturer's performance appraisal.
34	Lecturers may lack the skills in providing multiple ways of representation, action and expression and engagement using information technology.
27	Multiple skills and engagements in the use of technology within the curriculum are needed to gain literacy at university and access to opportunities to acquire them has not been considered for students with VI.
32	University electronic library databases and their resources are generally accessible to students with VI.
59	There is a hidden anxiety about teaching students with disabilities which unconsciously influences effort to make teaching and learning accessible.
13	If all the necessary accommodations and supports are in place, then VI would not be disabling in society.
49	The online aspect of the curriculum presents more challenges than benefits for students with VI at university.
21	UCT academics are skilled in accommodating students with VI in teaching, learning and assessment tasks.
5	Time required for agreement on appropriate reasonable accommodation for students with VI is factored into all planning.
1	Education for children and youth with disability has mostly been seen from the point of access to learning institutions rather than participation and achievement
2	Curriculum design at university lacks implementation of the United Nations Convention on the Rights of Persons with Disabilities.
54	Students with VI take longer to graduate from university.
37	There is little economic benefit for a university in making their course sites accessible.
43	Making a course site accessible is not worth it when there are so few students with VI and most times none at all



No	Statement SOF2
12	The threat of legal action seems to be at least as strong a motivator as the altruistic desire to accommodate the needs of students with disabilities.
16	The barriers that students with VI face, and not their impairments, are what cause them to be disabled.
57	Students with VI don't want to compete to be the best student but just want to pass.