

**The information-seeking process of blind and visually impaired Grade 12
learners in selected South African schools for the blind**

By

Francois Hendrikz

HNDFRA004

A thesis submitted in fulfilment of the Degree of Doctor in Philosophy in the Department
of Knowledge and Information Stewardship, Faculty of Humanities, University of
Cape Town

Supervisor: Emeritus Associate Professor Mary Nassimbeni



University of Cape Town

2020

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, Francois Hendrikz, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work or any part of it has been, is being, or is to be submitted for another degree in this or any other university.

For purposes of further research on the subject matter, I grant the University of Cape Town a royalty-free, non-exclusive, non-transferable license to publish this thesis in whole or in part in any format that the University deems fit.

Signed by candidate

Francois Hendrikz

Date: 31 January 2020

Acknowledgements

I want to acknowledge the following people who in various ways, made this thesis possible:

My wife for her patience, understanding and encouragement.

My children inspired me to undertake the study.

My family for their support and interest.

The staff and Senior Management of the South African Library for the Blind for taking care of business when I was not in the office.

The Board of the South African Library for the Blind who approved my study application and made it financially possible to do the study.

The Principals of the five Schools I visited during this study for allowing me to engage with the learners.

The learners of the five Schools for the Blind who participated in this study. Their enthusiastic participation during the interviews and the value they added to this study is highly appreciated.

Adeline Gowar for proof-reading this thesis and who taught me a lot about proper English.

My supervisor, Emeritus Professor Mary Nassimbeni, for her endless patience, support and guidance. She is the one the Beatles are referring to in their song Let it Be when they sing: "*Mother Mary comes to me, speaking words of wisdom.*" Without your wisdom, this study would not have been possible.

Lastly, our Heavenly Father, for giving me so many blessings, of which this study is another blessing.

Abstract

All people seek information for various reasons sometime during their lifetime. How this process has been researched and documented by various researchers is covered in this thesis, showing how the insights and lessons from various Information-Seeking Models in the literature have informed and enriched this study. These models provide a good understanding of the study field and frameworks to explain the different elements of the information-seeking process. All available Information-Seeking Models, however, are developed based on the assumption that it is only people with sight performing information-seeking. How applicable these Information-Seeking Models are for people who are blind or visually impaired is not addressed in the research. There are several different realities for a blind and visually impaired person seeking information. Some of these realities are, for example:

- i) the accessibility of the technology to access the information,
- ii) the accessibility of the information once it is located,
- iii) the availability of technologies to assist the blind and visually impaired person to enable him/her to seek information,
- iv) the availability of other people to assist the blind and visually impaired person during the information-seeking process.

The realities mentioned above are just some of the challenges not addressed by existing Information-Seeking Models.

The purpose of this study is, therefore, to give an overview of existing Information-Seeking Models and then to focus on the two leading researchers in the field, i.e. C. Kuhlthau and T.D. Wilson. These models of the information-seeking process were contextualised and assessed to the information needs model of N. Moore, who researched the information needs of blind and visually impaired people. Based on the work of the three researchers, a survey instrument was developed to determine the information-seeking process of Grade 12 learners at five South African Schools for the Blind. Since Grade 12 learners must decide about their future, after completing school, it was decided to research how Grade 12 learners seek information to assist them to decide about tertiary studies or work options. The study included learners who had not yet started the information-seeking process in this regard. A research instrument

was designed to collect data to investigate the information-seeking processes of the Grade 12 learners in order to assess the extent to which they correlated with the Information-Seeking Models of Kuhlthau (1991) and Wilson (1999).

The qualitative research method was followed in this study which was located in a constructivist paradigm. Interviews were conducted with 43 learners at the five schools for the blind, representing the total population of Grade 12 learners registered at these schools. The literature confirms that low sample sizes are customary when researching blind and visually impaired people. Face-to-face interviews were conducted at the five schools. The findings of the interviews were analysed through a framework analysis. A gap analysis was conducted to determine to what extent the findings correlated to or differed from the Information-Seeking Models. From this analysis, seven components were identified as part of the design of the Inclusive Information-Seeking Model applicable to blind and visually impaired Grade 12 learners, a significant outcome of the study. A broader application of the model is suggested. This Inclusive Information-Seeking Model will raise awareness and assist people working in an information environment to make the necessary provisions, to ensure that the information-seeking process for blind and visually impaired people is as successful as possible with available resources.

Contents

Declaration.....	ii
Acknowledgements.....	iii
Abstract.....	iv
List of Tables	xii
List of Figures	xiii
Chapter 1: Introduction to the Study	1
1.1 Introduction	1
1.2 Research Aim and Objective	4
1.2.1 Research Objective	5
1.3 Problem Statement.....	6
1.4 Research Question	7
1.5 Rationale and Contribution of this Study.....	9
1.6 Delimitation of the Study.....	12
1.7 Information Needs of Blind and Visually Impaired People	12
1.8 Overview of the Theoretical Framework	13
1.9 The Information-Seeking Process and associated models.....	14
Table 1.1 Information-Seeking Process models and Information Needs Model	17
1.10 Research Ethics	18
1.11 Definitions.....	19
1.11.1 Blind and Visually Impaired Person	19
1.11.2 Access.....	20
1.11.3 Accessibility.....	21
1.11.4 Usability	22
1.11.5 Assistive Technology	22
1.11.6 Career Information	23
1.11.7 Information Behaviour.....	25
1.11.8 Information-Seeking Behaviour	25
1.11.9 Information Searching Behaviour	26
1.12 Chapter Outline.....	26
Chapter 1: Introduction to the Study.....	26
Chapter 2: Literature review	26
Chapter 3: Theoretical Framework	27
Chapter 4: Research Design and Methods.....	27

Chapter 5: Research Findings.....	27
Chapter 6: Inclusive Information-Seeking Process Model	28
Chapter 7: Conclusion	28
References	28
Annexures	28
Chapter 2: Literature Review	29
2.1 Introduction	29
2.2 Search strategy.....	29
Table 2.1: Sample search strategies used	29
2.3 Information Behaviour in Context	30
Figure 2.1: Wilson’s nested model of information behaviour	30
2.4 Visual Perception	32
2.5 Information-seeking Behaviour: An Overview.....	37
2.6 Information-seeking Behaviour Research: New Approaches	38
2.6.1 Information-seeking as a Holistic Activity.....	38
2.6.2 Information-seeking Stages	39
2.6.3 Sense-making	41
2.6.4 Interactive Feedback.....	43
2.6.5 Alternative Views and models	44
Table 2.2: Listing of various Information-Seeking Behaviour Models	45
2.7 Researching information-seeking by blind and visually impaired people	50
2.8 Summary	52
Chapter 3: Theoretical framework	53
3.1 Introduction	53
3.2 Information-seeking Research	55
3.3 Moore’s research: Information-seeking needs.....	56
3.3.1 Six Dimensions	58
3.4 Wilson’s Research: Information-seeking Behaviour	64
Table 3.1: Correlation of research between Wilson (1999) and Moore (2000)	65
Figure 3.1 Wilson’s revised model of information behaviour (1999:257).....	67
3.5 Kuhlthau’s Information Search Process Model.....	70
Table 3.2: Kuhlthau’s Information Search Process (ISP)	72
Table 3.3: Kuhlthau’s ISP model and implication for blind and visually impaired people (1991)	77
3.5.1 Outcomes of the ISP Model	82

3.6 Information-seeking Process and Information-seeking Behaviour: a correlation	84
Table 3.4 –Correspondence between Wilson’s (1999) and Kuhlthau’s (1991) research.....	85
Table 3.5: Modes of Information-seeking.....	86
3.7 The Theoretical Framework	91
Figure 3.2: Information-seeking – an integrated theoretical framework.....	93
Table 3.6 Information-seeking Behaviour research: a macro overview	94
3.8 Summary	96
Chapter 4: Research design and methods	97
4.1 Introduction and purpose	97
4.2 Empirical research objectives and framework of the research instrument	97
4.3 Doing Research with People Living with a Disability	98
4.3.1 Interacting with Blind and Visually Impaired Participants.....	98
4.3.2 Participants’ Ability to Express Themselves.....	99
4.3.3 Participants’ Understanding of the Terminology.....	99
4.3.4 Conducting Research with People with Disabilities: Ethical Considerations.....	100
4.3.5 Assent Form Framework.....	103
4.4 Preparations for the interviews	106
4.4.1 Documentation and logistical arrangements.....	106
4.5 Research Design.....	107
4.5.1 Sampling Method and Technique	109
4.5.2 Population and Sample Size	110
4.5.3 Data Collection.....	115
4.5.4 The Research Instrument.....	116
4.6 Conducting the Research at the Schools	119
4.7 Data Analysis.....	120
4.7.1 Framework Analysis: a brief overview and rationale for the application.....	121
Table 4.1 Framework analysis: Analytical categories identified following empirical research ..	124
4.7.2 GAP Analysis.....	129
Chapter 5: Research findings	130
5.1 Introduction	130
5.2 Interpretation of the Data	130
5.3 Observations and Findings.....	132
5.3.1 General Observations	132
Table 5.1: Grade 12 learners per school participating in the research.....	132

5.3.2 Breakdown of Findings per School.....	135
5.4. Consolidation of Findings and Recommendations	162
5.4.1 Age, Nature of Visual Impairment and Reading Formats	163
5.4.2 Access to Information Technology and Information-Seeking Topics and Behaviour	164
Table 5.2: Access to and use of information technology (combined responses)	164
5.4.3 General Information-seeking Behaviour.....	168
5.4.4 Information-Seeking Behaviour	169
5.4.5 Learners Who Had Not Yet Decided	173
5.4.6 Recommendations	174
5.5 Summary	176
Chapter 6: Inclusive Information-Seeking Model (IISM).....	178
6.1 Purpose of Chapter	178
6.2 The Conceptual Framework.....	179
6.2.1 Context for the Conceptual Framework	179
6.2.2 Conceptual Framework Emerging from the Study	179
Figure 6.1 Conceptual framework and relationship between components of the Inclusive Information-Seeking Model	185
6.3 The Six Information-Seeking Stages: Applicability to this Study.....	185
6.3.1 Stage 1: Personal Context	186
6.3.2 Stage 2: Information-Seeking Purpose	186
6.3.3 Stage 3: Personalised Information-Seeking Behaviour	187
6.3.4 Stage 4: Information Source Selection/Approach	187
6.3.5 Stage 5: Evaluating the Results of the Information-Seeking Process	188
6.3.6 Stage 6: Information-Seeking Methodology and Application of Information	188
6.4 Gap Analysis	189
6.4.1 Gap One: The Impact of Sight on the Information-Seeking Process.	190
6.4.2 Gap Two: Lack of Accessibility of Information Resources	190
6.4.3 Specific Gaps	190
Table 6.1: Gap Analysis findings.....	191
6.5 Strategies to Address the Gaps.....	195
6.5.1 Strategy 1: Diversity and Inclusiveness.....	195
6.5.2 Strategy 2: Access and Accessibility	196
6.5.3 Strategy 3: Orientation and Guidance	197

6.5.4 Strategy 4: Information Literacy training, Language and Formulation of Information Searches	199
6.5.5 Strategy 5: Guidance of an Information Professional	201
6.5.6 Strategy 6: Training in the Evaluation of Information	202
6.5.7 Strategy 7: Expansion of Inclusive Publishing and Assistance by a Professional	203
6.6 Scaffolding Components of the Inclusive Information-Seeking Model	205
6.6.1 Context	205
6.6.2 Salient Features Extracted from the Research and Scaffolding Components	206
6.6.3 Information-Seeking Principles	208
6.6.4 Rationale for the Inclusive Information-Seeking Model and Scaffolding Components.....	210
Figure 6.2: Inclusive Information-Seeking Model and its Scaffolding	211
Table 6.2: Inclusive Information-Seeking Model: four scaffolding components with their respective elements	212
6.7 The Inclusive Information-Seeking Model	213
6.7.1 Component 1: User Awareness of Information Resources and How to Use Them	214
6.7.2 Component 2: Available and Accessible Assistive Technologies (hardware as well as software)	214
6.7.3 Component 3: Access to Up-To-Date Information Sources	215
6.7.4 Component 4: Access to Accessible Information Sources	215
6.7.5 Component 5: Access to an Accessible and Functional Library or Related Organisation..	215
6.7.6 Component 6: Access to a Trained Librarian or other Information Professional	215
6.7.7 Component 7: Information Literacy Training	216
Figure 6.3: Inclusive Information-Seeking Model for Blind and Visually Impaired Grade 12 learners	217
6.8 Research Support for the Proposed Inclusive Information-Seeking Model	217
Table 6.3: Inclusive Information-Seeking Model: linkages between model components and scaffolding components and elements	218
6.9 Summary	220
Chapter 7: Summary, Conclusion and Recommendations for Further Research	223
7.1 Purpose of Chapter	223
7.2 Summary of Thesis	223
7.3 Key Conclusions from the Study and Implications for Practice	227
7.3.1 Interactivity of Information-Seeking Models	227
7.3.2 Inclusivity of Existing Information-Seeking Models	227
7.3.3 Accessible Information Resources	228

7.3.4 Training of Blind and Visually Impaired People	229
7.3.5 The Blind and Visually Impaired Learner as Innovative Information Seeker	230
7.4 Suggestions for Further Research	230
7.4.1 Career Counselling	231
7.4.2 Information Literacy Training.....	232
7.4.3 Broader Implication of the Inclusive Information-Seeking Model.....	233
7.5 Conclusion.....	234
References.....	236
Annexures	252
Annexure 1: Research information sheet and key terminologies	252
Annexure 2(a): Letter to the Principal of the School	254
Annexure 2(b): Consent form for Principal of the School.....	259
Annexure 3: Learner Assent Form	261
Annexure 4: Research instrument	263
Category 1: General introductory questions:	264
Category 2: Access to technology	264
Category 3: Information seeking behaviour questions (General).....	265
Category 4: Information seeking behaviour questions (Study focus).....	265
Category 5: Information seeking behaviour questions (Work focus).....	267
Annexure 5 Research instrument – linkages with research and reason for the questions	270
Annexure 6 Framework Analysis: Empirical research - charting of data	285

List of Tables

Table 1.1	Information-Seeking Process models and Information Needs Model.....	17
Table 2.1	Sample search strategies used	29
Table 2.2	Listing of various Information-Seeking Behaviour Models	..45
Table 3.1	Correlation of research between Wilson (1999) and Moore (2000).....	65
Table 3.2	Kuhlthau’s Information Search Process (ISP).....	72
Table 3.3	Kuhlthau’s ISP model and application for blind and visually impaired people..	77
Table 3.4	Correlation of Wilson (1999) and Kuhlthau’s (1991) research.....	85
Table 3.5	Modes of Information-Seeking.....	86
Table 3.6	Information-Seeking Behaviour research: a macro overview.....	94
Table 4.1	Framework analysis: Analytical categories identified following empirical research	124
Table 5.1	Grade 12 learners per school participating in the research	132
Table 5.2	Access to and use of information technology (combined responses).....	164
Table 6.1	Gap Analysis findings.....	191
Table 6.2	Inclusive Information-Seeking Model: four scaffolding components with their respective elements.....	212
Table 6.3	Inclusive Information-Seeking Model: linkages between model components and scaffolding components and elements.....	218

List of Figures

Figure 2.1	Wilson's nested model of information behaviour.....	30
Figure 3.1	Wilson's revised model of information behaviour.....	67
Figure 3.2	Information-Seeking – an integrated theoretical framework.....	93
Figure 6.1	Conceptual Framework and relationship between components of the Inclusive Information-Seeking Model	156
Figure 6.2	Inclusive Information-Seeking Model and its Scaffolding.....	211
Figure 6.3	Inclusive Information-Seeking Model for Blind and Visually Impaired Grade 12 learners.....	217

Chapter 1: Introduction to the Study

1.1 Introduction

“The result of a more truly user-oriented, innovative, experimental information profession should be a reduction in the marginality of information service. Scientific research generally recognises the significance of services which provide access to the external research literature. However, when different kinds of organisations adopt such services with little or no adaptation in the light of a proper analysis of the needs of users or their relationship with organizational communication systems, information services become increasingly marginal to the organization's functioning” (Wilson, 2006(a):668).

The above statement by Wilson highlights one of the challenges experienced by blind and visually impaired people when requiring Library and Information Services (LIS). Apart from Libraries for the Blind or organisations established to specifically service the reading and information needs of blind and visually impaired people, general libraries have paid little or no attention to adapting services to meet their needs. There is also very little understanding of how to match the library’s information resources, systems, skills of the library staff to the needs of blind and visually impaired people. This marginalisation is confirmed in a research report published by the Royal National Institute of Blind People (RNIB) in the United Kingdom:

“Some libraries have yet to introduce improvements in their provision of services for people with sight loss. They have not ensured their physical environment is welcoming to all customers or that their staff have (sic) been properly trained. They have not included people with sight loss in their planning, and they have not done enough to ensure blind and partially sighted people know what the library has to offer” (Royal National Institute of Blind People, 2007:2).

In response to the above quotation, the focus of this study is primarily to investigate the information-seeking behaviour of blind and visually impaired Grade 12 learners when addressing their information needs as they relate to what they plan to do after completing Grade 12. All Grade 12 learners participating in this research were 17 years of age. The reason for the focus on Grade 12 learners is that they have reached a critical stage of their formal education and are faced by various options of what they could do in the future after completing their Matriculation. The information-seeking behaviour research of Kuhlthau

(1991; 2008), Wilson (1999) and Moore (2000) as discussed in Chapter 2 and 3 of this study was used to assess the extent to which these studies could assist in our understanding of the information-seeking behaviour of blind and visually impaired learners specifically. Understanding the information-seeking behaviour of blind and visually impaired Grade 12 learners may assist the Library and Information Services (LIS) professionals to understand their information-seeking processes and respond to them regardless of the subject. The information needs of the Grade 12 learners that were considered were associated with what they plan to do after completing Grade 12, i.e. whether they were planning tertiary studies or to start working, or whether they were still considering their options. There are numerous studies available exploring the diverse user needs of blind and visually impaired people (Eldridge 1982; Stuart 2003; Williamson, Schauder & Bow 2000). Most of these studies agree that the information needs of blind and visually impaired people are not that much different from sighted people. To know the needs of the user is important but what is equally important from the perspective of a LIS professional is how that need can be met by the systems and resources available in the library.

Various researchers in the LIS field have developed information-seeking and searching models. An overview of these models is provided in Chapter 2. The two terms tend to be conflated in the literature. The broader term, i.e. information-seeking process (ISP), is used in this study. ISP encompasses "information searching" which is understood to have a narrower compass, viz active searching for information. This view is supported by Kingrey (2002:1) who confirms that information-seeking "often serves as an overarching umbrella set of related concepts and issues". She indicates that information-seeking involves the search, retrieval, recognition, and application of meaningful content. Information-seeking incorporates a prior cognitive activity involving the acknowledgement of an information need, or a gap in knowledge which will then lead to an information search. Bates (2002:4) suggests that information-seeking may be "Directed" or "Undirected". Linked to these two concepts, Bates suggests that the information-seeking process could be either "Active" or "Passive", i.e. where the individual does anything actively to acquire the information or passively absorbs available information without seeking it. Where an individual is actively involved in looking for something specific, this activity is regarded as searching.

Williamson, Schauder & Bow (2000:79) noted that despite the key role information should play in the lives of disabled people there is a "paucity of studies about the information-seeking behaviour of groups of people with disabilities, including blind and sight-impaired people." In his study of the information-seeking needs of blind and visually impaired people looking for health and social information, Case (2002) found that there is very little literature available addressing "information behaviour" of people with a visual impairment. , "Information behaviour" refers to information needs, information sources and information-seeking behaviour. The above observations are confirmed eleven years later by Eskay and Chima (2013:629) in their study of library service delivery to blind and physically challenged students in Nigeria. They are stating that their literature search "...revealed a poverty of studies about information need and information-seeking behaviours of this group (blind and visually impaired students)."

The scarcity of published research material focusing on blind and visually impaired people in general and the information-seeking behaviour models of this group of people, in particular, is also confirmed in the South African environment. An assessment of the *Index to South African Periodicals (ISAP)* compiled by the National Library of South Africa reveals that only 100 articles were published since 1961 to date on topics related to blind and visually impaired people. Articles covered the following broad topics:

- i) employment;
- ii) the causes of blindness and rehabilitation;
- iii) the life of blind and visually impaired people;
- iv) legislation;
- v) policy;
- vi) organisations and structures serving blind and visually impaired people;
- vii) education;
- viii) medical development to address blindness and
- ix) technological development to assist blind and visually impaired people.

No articles were published on information-seeking challenges or behaviour.

For LIS professionals to improve service delivery, it is essential to understand the preferences and information-seeking behaviours of various library users, in terms of planning service delivery and information content. This information service planning needs to be done in the context of the perceptions and experiences of these users. To research the preferences and needs of library users and to respond to them is essential when planning and delivering appropriate library services (Davies, 2007:793). Because of the scarcity of research literature about the information-seeking behaviour and or models of blind and visually impaired people, it is, therefore, the general aim of this study to contribute to the research literature in this regard. This research investigated how selected Information-Seeking Models apply to a group of blind and visually impaired Grade 12 learners located in five different South African schools for the blind. The research was done by comparing two information-seeking behaviour models and one information needs model to assess their applicability to this target group. The reason for the selection of the specific three models is provided in Chapter 1, Section 1.8 and Chapter 3, Section 3.1. The investigation of the differences and similarities among the three models served as a theoretical framework for the study. The theoretical framework was tested through a gap analysis of findings emerging from the empirical part of this study. It was possible to determine through the gap analysis the extent the literature findings agree with or differ from the findings of the empirical research. The identified gaps were analysed and considered in the formulation of an Inclusive Information-Seeking Model (IISM) applicable to blind and visually impaired Grade 12 learners.

1.2 Research Aim and Objective

This study aimed to fill the research gap noted in the Introduction of Chapter 1, which highlighted the lack of research into the information needs and behaviour of blind and visually impaired people. In so doing, its primary purpose was to design and develop an inclusive ISP model applicable to the specific group selected for the study.

It is relevant to take note of the observation made by Belkin & Vickery (1985) about the value of models when designing user-centred information systems. They make the point that it is crucial to have an image or model of the user as well as of the text represented in the system. Understanding these concepts will assist in improving the communication between system

and user. In this study, an image of the blind and visually impaired a Grade 12 learner emerged as a central element to be incorporated in the proposed Inclusive Information-Seeking Model (IISM). The aim of the study was therefore to develop a proposed Inclusive Seeking Model applicable to blind and visually impaired Grade 12 learners in selected South African Schools for the Blind. Models are tools to assist the information professional to improve his/her understanding of the behaviour of the user and to use that knowledge to improve service models. Although this was not the principal aim of the study, it is suggested that the proposed IISM may have a broader application for other blind and visually impaired people in different contexts.

1.2.1 Research Objective

Several Information-Seeking Models have been proposed by researchers in the LIS field (Kuhlthau,1991; Leckie, Pettigrew & Sylvian, 1996; Wilson, 1997; Spink & Cole, 2006; Wilson, 1999). These models are reviewed in chapters 2 and 3 of this study to determine the extent to which the information-seeking behaviour of blind and visually impaired people, in general, is acknowledged in any of these models. It examined the extent to which these models refer to some of the challenges experienced by blind and visually impaired people in their information-seeking activities. These challenges are the unavailability of accessible resources, lack of access to assistive reading devices and assistive technologies to utilise different information sources generally available to sighted readers, e.g. databases, online catalogues, and digital material (Boman 2006:35; Moore 2000:46; Beverley, Bath & Barber, 2007:10). These and other factors may, therefore, have an impact on how one should understand and interpret existing Information-Seeking Models in the information-seeking environment of the blind and visually impaired person. Williamson, Schauder & Bow (2000) and Moore (2002) describe the information-seeking behaviour and needs of blind and visually impaired people in general. The article by Williamson, Schauder & Bow (2000:79) describes the information-seeking behaviour of blind and visually impaired people concerning how the Internet is utilised during the process. Their recommendations are, however, not linked to a specific Information-Seeking Model to contextualise the information-seeking behaviour of blind and visually impaired people, nor do they propose any Information-Seeking Model to accommodate contextual factors. Moore's article (2002) provides a social Information needs model of blind and visually impaired people, i.e. the information people need to live their

daily lives. This information needs model is not linked to the information-seeking behaviour of blind and visually impaired people.

As mentioned in Section 1.2 earlier, the research aim of this study is to generate a new inclusive ISP model for blind and visually impaired people based on the findings of the empirical study as mapped against the most prominent ISP models in the literature. The following research objective supports the aim of this research:

To determine to what extent existing information-seeking behaviour models and related research in the LIS study field, apply to the information-seeking behaviour of a group of blind and visually impaired Grade 12 learners when seeking for specific information.

The research objective will be achieved through the collection and analysis of data collected through literature research and empirical research.

1.3 Problem Statement

The information-seeking process (ISP) is a well-defined and researched topic in the LIS field. Several researchers have produced ISP models, either from a general perspective or located in a specific professional or academic context, e.g. Leckie, Pettigrew & Sylvain (1996), Spink & Cole (2006) and Wilson (1999). These models describe the process, assuming that the person involved is sighted. The ISP and various models incorporating underpinning universal principles are addressed comprehensively in the literature review. The following summary captures the essence of existing ISP models proposed in the literature and serves to explicate the problem statement:

- i. The user is central to the ISP.
- ii. There is an information need to be addressed.
- iii. The need is addressed, by engaging in information-seeking behaviours which may include activities such as browsing, extracting, and verifying.
- iv. Information systems and sources are utilised in the process.
- v. The process may be successful or failure due to various reasons.

Existing ISP models assume that although the ISP is multi-faceted, it flows in an uncomplicated sequence from the one stage to the other, for all people seeking information. The models assume an information-seeking environment where a person has sight and is information literate and can assist him/herself independently and can use all the information sources and systems that are available and accessible to locate and find information. These models do not accommodate the person without sight. Blind and visually impaired people are also information seekers; however, it cannot be assumed that they have the same exposure to information resources and can interact with information as efficiently and in the same manner as sighted people do. For blind and visually impaired people, information sources are limited, and suitable formats may not be accessible. They are more dependent on third parties to assist them to find the information for which they are looking. Very little is known about the ISP of blind and visually impaired people. If the LIS professional does not have a sound knowledge of the ISP of all their clients, this lack will harm the quality of library services rendered.

The purpose of the investigation was to test the validity and applicability of the dominant ISP models and to assess to what extent they apply to blind and visually impaired people, with particular reference to the Grade 12 learners. The research was done by developing a theoretical framework based on critical analysis and critique of the three models. A gap analysis was done to establish whether there is a gap between theory (i.e. the ISP models) and practice (i.e. the findings of the empirical component). Finally, strategies are proposed to close that gap by building an Inclusive Information-Seeking Model.

1.4 Research Question

The main research question for this study is as follows: How would an Inclusive Information-Seeking Model for blind and visually impaired Grade 12 learners be structured, based on the assessment of selected information-seeking models and informed by empirical findings emerging from research interviews with blind and visually impaired Grade 12 learners?

The main research question was addressed by exploring the following sub-questions:

- a. What are the differences/similarities of the selected ISP models proposed by Kuhlthau (1991; 2008), Wilson (1999) and Moore (2000)?

- a1: To what extent do existing ISP models consider the circumstances, needs, challenges and requirements of the blind and visually impaired learner?
- b. What is the typical ISP of a Grade 12 learner when searching for career information?
- b1: Are there any external or personal factors that may affect a blind and visually impaired learner's ISP and information behaviour? Factors to be considered include:
- i) health;
 - ii) age;
 - iii) mobility;
 - iv) level of independence;
 - v) support available from family, friends, community groups; vi) living conditions (on their own or with others);
 - vi) interests;
 - vii) exposure to information technology;
 - viii) how long the learners have been blind and their acceptance of their visual impairment;
 - ix) any other factors.
- b2: To what extent may formats such as material in digital or braille influence the ISP of blind and visually impaired Grade 12 learners when seeking career information?
- b3: To what extent is the accessibility of career information in format and content a factor in the ISP of blind and visually impaired Grade 12 learners?
- b4: Are there differences/similarities between blind and visually impaired Grade 12 learners when searching for career information?
- b5: What role does access to career information play in the life of the blind and visually impaired Grade 12 learner? Some of the factors considered include:
- i) what type of information needs are expressed;
 - ii) for what purpose is the information needed and utilised;
 - iii) where and how do they get the information, and
 - iv) what types of information sources were accessed?
- b6: Are there factors that may influence the ISP of blind and visually impaired Grade 12 learners in an urban school compared to a school in a rural area when they are searching for career information?

c. How can the data as analysed, and the relationship between the findings of this study and the ISP models proposed in the literature, be used to generate the essential components of an Inclusive Information-Seeking Model?

c1: What are the unique and identifiable components that can be used as part of a proposed Inclusive Information-Seeking Model?

c2: What, if any, is the relationship between these components if more than one component is identified or is there a reason for them to be independent?

1.5 Rationale and Contribution of this Study

The following statement amplifies the rationale of the study: "Depending on the nature and extent of their sight impairment, all visually impaired people throughout the world need to make adjustments to normal reading methods to have access to content." (Owen, 2007:809). This statement is significant for this study because if blind and visually impaired people must make "adjustments to normal reading methods" then this suggests that their information-seeking methods must be adjusted as well. The capacity of information and communication technologies has extended the scope of material in alternative formats accessible for blind and visually impaired people. A study by Craven and Brophy (2003) found, however, that blind and visually impaired people spent more time navigating through Internet searches than sighted students. Spink & Cole (2006:26) point out the limitations of applying an ISP to an Internet environment, because of its limited explanatory power for concepts, models and the theoretical notions underpinning information-seeking-problem solving processes. Spink and Cole (2006) call for the broadening of this approach to an anthropological level. This suggestion implies that one needs to look at information-seeking in a wider context and not just from a problem-solving perspective. One should also consider the person in the process, the knowledge, skills and abilities of the person as well as the environment they are exposed to in order to make sense of the information-seeking process. These factors imply that the physical and intellectual abilities of the person are of relevance for people assisting the information seeker in the process and that their assistance may also be assessed to the extent that their professional knowledge is helpful or not. People practise information-seeking, and the anthropological focus should, therefore, be part of information-seeking studies. Spink and Cole (2006) specifically note the importance of paying attention to the communication

patterns within people's situation or world in studies of information-seeking. This argument opens a fruitful line of inquiry from the perspective of blind and visually impaired people because of the unique manner in which they engage with printed communication in different accessible formats. This requirement may have a different impact on the information-seeking process compared to that of people with sight able to read any digital or printed text.

By adopting the broader anthropological and communicative approach advocated by Spink and Cole (2006:25), this study intended to generate insights into the information solving methods of blind and visually impaired people. On a policy level this study could serve as a reference for Authorities such as Government and Non-Governmental Organisations formulating national policies or guidelines about the provision of information services to blind and visually impaired people. On an operational level, this study could raise awareness among LIS professionals (and people active in related fields) of the particularities of the ISP of blind and visually impaired people thus empowering the professionals to provide appropriate services for blind and visually impaired people in general.

General ISP models are conceptual contributions that may begin to assist our understanding of the ISP of blind and visually impaired people. These conceptual models together with the unique information-seeking challenges facing blind and visually impaired people will contribute to our understanding of the ISP of the target group of this study and the design of an inclusive ISP model. This study brings together two distinct study fields. It uses the research in the Library and Information Science field and specifically researches falling under "user studies". According to Wilson (2006(a):658), the "information needs and behaviour" study field is a sub-study field within user studies. This study field is brought together with the second study field, i.e. the broader blind and visually impaired study field and specifically the information behaviour of blind and visually impaired Grade 12 learners. This study assessed and compared various Information-Seeking Models and theories and tested them in an empirical context. The empirical research was done to develop a conceptual understanding of the information-seeking process of blind and visually impaired Grade 12 learners, seeking career information. The reason for selecting Grade 12 learners and their particular information-seeking behaviour is explained in Chapter 4, Sections 4.5.1 and 4.5.2.

A secondary rationale for this study, therefore, is to contribute to the research literature in two research domains, i.e. the Library and Information Service domain as well as the Blind and Visually Impaired research domain. It is anticipated that this research will also contribute to raising awareness amongst LIS and related information professionals to be more inclusive in the planning and provisioning of library services to a wider community of people where blind and visually impaired people are included. Also, it will assist people who are blind and visually impaired to understand that the information-seeking process is a multi-layered process that takes place in a specific framework. The framework of the information-seeking process will guide blind and visually impaired people to know what to expect from themselves and the information service provider when seeking information. Duckett and Pratt (2007) have found that visually impaired people almost demand their inclusion and involvement in research that may have a beneficial impact on their lives. To this extent two blind people were involved in the design of the research and the interview schedule was tested with a group of four Grade 12 learners.

In summary, this study may have an impact in four areas.

The first impact area is the LIS field. If more research is available to LIS practitioners and people in related fields, it will make them aware of the challenges of this particular user group and how to respond to that appropriately. This study may create awareness of an inclusive library service delivery model. If LIS professionals can read about research in this field, it may contribute to their understanding of the information needs and behaviours of blind and visually impaired people in general or in the case of this study about Grade 12 learners. This understanding may, in turn, contribute to the establishment or improvement of a more inclusive LIS delivery approach.

The second impact area is the blind and visually impaired sector. This study, through its evaluation of widely accepted Information-Seeking Models and their applicability to blind and visually impaired people, will deepen and expand the knowledge of the field. The empirical study will provide a practical viewpoint of the information-seeking behaviour of blind and visually impaired learners. The comparison of the research literature with the empirical findings will expand the knowledge base available in the blind and visually impaired sector. It

may assist blind and visually impaired people to understand better their own information needs and behaviours and how to respond to them to improve their quality of life.

The third impact area is on the scarcity of research material in this field. Following the description in Section 1.3, there is a strong indication that there is a scarcity of research material addressing the information-seeking behaviour and or models of blind and visually impaired people in general but also specifically in the South African context. This study will make a small contribution to address this scarcity of research material.

Lastly, this study acknowledges and confirms that the information behaviour of blind and visually impaired people should be researched like that of any other user group and should not be dealt with as a separate issue or neglected because it is a minority user group. The study is located in a human rights paradigm which asserts the claim of blind and visually impaired people to equality and not to be marginalised or neglected. It is of particular relevance since one of the South African Government's aims is to create a socially inclusive society with a strong emphasis on social cohesion (Presidency (The), 2012:458).

1.6 Delimitation of the Study

This section must be read in conjunction with Chapter 4, Section 4.5.2 discussing the population and sample size approach for this study. The study was delimited in terms of the subject content of the information-seeking of blind and visually impaired Grade 12 learners, viz. career information. Reasons for this focus are explained in this chapter (see Section 1.1 and 1.4). The impact of the information located by the Grade 12 learners was not considered in this study since it is outside the purview of the ISP. The application, relevance, and the level of accuracy of the information found by the learners through the information-seeking process did not form part of this study. The scope of the study also excluded the challenges about the production of accessible media, and any other physical disability of the sample group of Grade 12 learners selected, such as deafness.

1.7 Information Needs of Blind and Visually Impaired People

Blind and visually impaired people need access to books and information for the same reason that sighted people do for lifelong learning, for work, for leisure, and to participate in society

fully. The information needs of blind and visually impaired people can, therefore, be met by the collections generally offered by public libraries to their communities. (Brazier, 2007: 864; Kavanagh & Christensen Sköld, 2005:6). What is not evident is whether there is a difference in how blind and visually impaired people search, find, contextualise, and apply what they read. Based on these two references, it is accepted that the information needs/behaviour of blind and visually impaired people are not different from those of people who have sight. What needs to be acknowledged is that certain adaptations need to be made, to make it possible for blind and visually impaired people to seek, find and apply the information for which they are seeking. Information needs are addressed by following an information-seeking process. This study explored the ISP of Grade 12 learners concerning their career information needs. More about the information needs of blind people are addressed in Section 3.3.

1.8 Overview of the Theoretical Framework

This section identifies and justifies the theoretical framework of this study.

Kadli & Kumbar (2013) reviewed the literature in the library and information science field regarding the Information Communication Technology environment. It is, therefore, not a comprehensive literature review covering various disciplines. They make the point that a literature review is not a “chronological catalogue of all of the sources, but an evaluation, integrating the previous research...” (2013:Paper 951). What is evident from their literature review article is that published literature about information-seeking behaviour and models is not abundant in the library and information science field (cf Section 1.2). They cite 51 articles published between 1983 to 2013 about information-seeking behaviour in general, i.e. fewer than two articles per year. They also cite only 15 articles dealing specifically with information-seeking models, none of which is located in the context of blind and visually impaired people. This scarcity of published research about information-seeking models focussing on blind and visually impaired people has also been raised by Beverley, Bath and Barber (2007:12). The researchers stated that “Very few information models have been specifically applied to the information searching behaviour of people with a visual impairment”.

A further examination of the literature in the study area shows that various researchers have proposed various information-seeking or information behaviour models over the years, albeit

not referring to blind and visually impaired people. The Information-Seeking Models of Kuhlthau (1991; 2008), Wilson (1999) and Moore (2000) were used to frame the study. Moore's research is the only one of the three that specifically focussed on blind and visually impaired people. The reason for using the models of these three researchers is that they are the most frequently cited in the Library and Information Science literature and are acknowledged as the three leading experts in this field (Rutgers School of Communication, 2013; Blessinger & Frasier, 2007:164; Wilson, 1999(a); Moore, 2000).

1.9 The Information-Seeking Process and associated models

Kuhlthau's (2008:67) model of the Information-Seeking Process (ISP) was developed as a conceptual framework presenting a holistic view of information-seeking from the user's perspective in six stages:

- i. Initiation;
- ii. Selection;
- iii. Exploration;
- iv. Formulation;
- v. Collection and
- vi. Presentation.

This study considered the implication of the six stages for the blind and visually impaired person. Kuhlthau describes the (ISP) as "the user's constructive activity of finding meaning from information in order to extend his or her state of knowledge on a particular problem or topic." (Kuhlthau, 1991:361).

Wilson's (1999:256-266) model links with the statement of Kuhlthau (1991) as the basis of his model is to move a person with an information need from a state of uncertainty to certainty. To achieve this, a person moves through four stages which are the core of the Wilson model, i.e.:

- i. the person must identify his/her information problem;
- ii. the person must define the information problem, i.e. to determine the exact nature of the information problem in order to direct the information-seeking process;

- iii. find a solution for the information problem, i.e. to find and use the appropriate options available to address the problem, and
- iv. the person determines how to respond to the information problem. Wilson's model is fully described in Chapter 3.

This study used the ISP model as proposed by Kuhlthau (1991) and the models proposed by Wilson (1999a) and Moore (2000) to inform the research design, both for the generation of research questions to guide this study and as an analytical framework. These ISP models and research facilitated a comparison between the empirical findings of the study and what the models predict. Comparing the literature research with empirical research allowed the researcher to formulate and present an inclusive ISP model (IISM) based on the empirical findings concerning a category of information seekers not covered by the models. The IISM is discussed in Chapter 6, Section 6.7. These findings are, in turn, derived from an empirical inquiry guided by the selected ISP models.

Before deriving meaning from information, one must be able to locate it and then interact with it either through the process of reading or listening. For blind and visually impaired people, finding information is the first challenge to overcome. For instance, it cannot be assumed that a blind and visually impaired person can visit their local public library and find the information as quickly as a sighted person. Moreover, the unavailability of assistive technologies in the library will require the blind and visually impaired person to depend on another person, e.g. the librarian, a family member or a member of the library to assist him or her. The information-seeking process is, therefore, on this level alone different for the blind and visually impaired person. Access to the Internet is not necessarily a distinct solution or alternative for most people in the South African context. In rural areas, connectivity is sometimes a challenge due to limited telephone network infrastructure and available spectrum. An additional challenge is that the cost of data makes the Internet financially inaccessible for most South Africans. The South African Government is addressing these matters, and it is anticipated that during 2019/2020, there will be an improvement (De Villiers, 2019). It will still take time for the benefit to reach the majority of people.

In addition to the two ISP models mentioned above, the social information needs model of blind and visually impaired people, as proposed by Moore (2000) was also considered as part of this research. This model focused on information needs rather than on information-seeking, provided a valuable context to guide understanding of the information-seeking behaviour of the target group. It was accepted in this study as a relevant model most applicable to the information behaviour of blind and visually impaired people because it was developed directly in response to a literature review of the information needs of visually impaired people (Beverley, Bath & Barber, 2007:12). The two ISP models, as well as the information, needs model of Moore, are made up of various factors that may influence the ISP of the blind or visually impaired person.

These factors include the literacy level of the target group as well as various other literacies, e.g. braille, computer, audio and various assistive devices. Other variables that may also have an impact on the ISP of the learners were also considered. Variables referred to includes level of mobility, confidence (i.e. the confidence of the learner to go to a library on his/her own without assistance or any other activity where he/she operates independently of another person) and life skill levels were. The study considered factors such as the accessibility of systems or processes to allow independent operations by blind and visually impaired Grade 12 learners. The systems developed by the Grade 12 learners over the years to search and find information were considered as well as any other applicable factor relevant to this study. This study also considered the format of the information medium, i.e. audio, braille, electronic, and the implications of each in the ISP. These factors were derived after analyses of the work of the three researchers mentioned above and built into the research instrument. Annexure 5 provides the origins of the factors and how it was accommodated in the research instrument.

Table 1.1. provides an overview of the structure and elements of the models that were assessed. The table format used in this instance to present the models next to each other is not meant to portray a horizontal comparison of the equally numbered elements. This assessment is expanded in Chapter 3, Table 3.6, indicating the similarities and unique differences between the models. The purpose of the assessment was to identify the various elements in these models that served as a reference in the investigation of the ISP of blind

and visually impaired learners. It assisted with the comparison of these elements with the findings of the empirical part of the study.

With all three models, there is a starting point, a description of the process itself and a terminal point. It may be coincidental that all three models consist of six elements or clusters of activities. The models use different terminologies to describe the same process, e.g. Kuhlthau’s (1991) “initiation” relates to what Wilson (1999) refers to as the “context of the person”, i.e. the context a person finds him- or herself in is the starting point for information-seeking. Moore’s (2000) model makes a distinction between the “Agent” and the “User”, a significant distinction in this study because of the unique characteristics of the target market. This distinction is discussed in Chapter 3, Section 3.3.1 Kuhlthau’s Information-Seeking Model was developed to describe a systematic search for information to solve a specific problem (Kuhlthau, 1993). Wilson’s (1999) model involves successive iterations and does not necessarily describe the complexities of information practices during Everyday Life Information-Seeking (ELIS) (Wilson, 1999(b)). ELIS was defined by Savolainen (2010:2735) as the type of information-seeking process people use, “to orient themselves in daily life or to solve problems not directly connected with the performances of occupational tasks.” Detailed analysis and comparison of Information-Seeking Models are amplified in Chapter 3.

Table 1.1 Information-Seeking Process models and Information Needs Model

Kuhlthau’s ISP model	Wilson’s ISP model	Moore’s information needs model
<p>1. Initiation – beginning the process. Feelings of uncertainty and a need to connect new to existing knowledge.</p>	<p>1. Context of information need – the person in context is the focus of the information need</p>	<p>1. Function – why do people need information?</p>
<p>2. Selection – selecting an initial general topic with feelings of optimism by using selection to identify the most useful area.</p>	<p>2. Activating mechanism – some information sources are used more than others because of the stress/coping theory.</p>	<p>2. Form – what kind of information do people need?</p>

Kuhlthau's ISP model	Wilson's ISP model	Moore's information needs model
3. Exploration – feelings of uncertainty and confusion about the topic and process is reduced through investigation to extend personal understanding.	3. Intervening variables – variables that may influence a person's information-seeking process, e.g. psychological, demographics, role-related or interpersonal, environmental and source characteristics.	3. Clusters – what do people need information about?
4. Formulation – focus the process with the information encountered. Feelings of confidence increase.	4. Activation mechanism - factors that may activate the search process, e.g. risk/reward	4. Agents – who initiate the information activity?
5. Collection – interacting smoothly and confidently with the information system as the topic is defined and extended by selecting and reviewing information.	5. Information-Seeking behaviour – a person may find information through various ways, e.g. passive information, passive and active search and ongoing search.	5. Users – how do needs differ between different groups?
6. Presentation – completing the process with a feeling of confidence or failure depending on the usefulness of the findings.	6. Information processing and use – part of satisfying the information need.	6. Mechanisms – which mechanisms can be used to meet information needs?

In addition to assessing the various information-seeking/behaviour models in detail, the study explored and contextualised the following key concepts.

1.10 Research Ethics

The ethical implications of involving people with disabilities are discussed in Chapter 4, Section 4.3.4. In this section, the question of research ethics is only contextualised broadly. Ethical clearance was obtained from the University of Cape Town for this study. The Ethics

Committee considered the application for ethics clearance, the research summary, the interview schedule, the assent form, the letter to the Principal of the School and the letter to the parents of the learners. The Chair of the Committee issued a formal ethical clearance letter. This letter was provided to the Principals of the School when arrangements were made to visit their school. All Principals of the Schools approved the learners' participation at their schools without hesitation. All learners signed or approved the researcher to sign an assent form after an explanation of their rights and how the interviews would be conducted. The assent form is attached as Annexure 3 in the Annexure section.

The learners gave their approval to the audio recording of the interview. All information collected during interviews was handled confidentially. The names of participants, organisations, tertiary institutions; employers or any other names were anonymised to maintain confidentiality in the thesis. No questions were asked that might be potentially harmful or might cause discomfort. The interviews took place at the five schools in an environment familiar to the learners. Learners did not have to travel to any venue which ensured that they were not anxious or fatigued, and it minimised logistical challenges. No conflict of interest was recorded during the interviews.

1.11 Definitions

Various key terms were used in this study. The literature provided many different descriptions or definitions for these terms. It was, therefore, essential to define those terms for this study to avoid ambiguity and to ensure consistency.

1.11.1 Blind and Visually Impaired Person

It was interesting to note that the World Blind Union (WBU) did not have a definition for "blindness" and by implication for a blind and visually impaired person (World Blind Union, 2003). The reason for this is that they regard definitions as having the effect of excluding people which they would like to avoid. Kleynhans and Fourie (2014:368-379) researched the use of the term "visually impaired". One of their findings is that there is a lack of definitions for this term in the LIS literature. Various researchers and organisations use various terminologies. The World Health Organisation (2003:7) defines a blind and visually impaired person according to their classification system based on the status of the visual acuity and

peripheral vision of the person. This definition is regarded as too clinical for this study. Low vision is described by Duffy (2018) as uncorrectable vision loss that interferes with daily activities which should be defined in terms of function rather than numerical test results. Low Vision is having “not enough vision to do whatever it is you need to do,” and varies from person to person. Vision is permanently reduced and cannot be corrected with regular glasses, contact lenses, medicine, or surgery (Duffy, 2018). The terms partial sightedness, low vision and blindness are generally used to describe people who have irretrievably lost their sight (Arditi & Rosenthal, 1998). For this study the definition of a “blind and print-handicapped reader” provided in the South African Library for the Blind Act, 91 of 1998 is used, viz. “any reader (person) who cannot use ordinary printed material because of a visual or physical restraint.” (South African Library for the Blind, 1998).

1.11.2 Access

Chapter 2 of the South African Constitution (Department of Justice and Constitutional Development, 1996) contains the South African Bill of Rights. Section 32 focuses specifically on access to information. The provision is: "everyone has the right to access of information." Access is, therefore, a South African Constitutional requirement. To access information means that it must be available somewhere. One cannot access something if it is not available. The opportunity to access information determines the level of inclusivity of a person in society. Moore (2000:4) makes it clear that visually impaired people are at the most significant risk of being socially excluded as a result of poor access to information. To address this challenge and to make the Constitutional requirement more tangible, the National LIS Policy for Library and Information Services in South Africa (Department of Arts & Culture, 2018:54) describes various access indicators to LIS. These indicators are geographical location, distribution, opening hours, affordability, information tools, discovery systems and services. Another element closely linked to access is that once a person can access information, it is assumed that he/she is capable of using it and of understanding the value of the information sources. This skill is dependent on the literacy level of a person as well as his/her information literacy level.

1.11.3 Accessibility

Access to information for blind and visually impaired people is a challenge because it is not always... "appropriately packaged for visually impaired people" (Beverley, Bath & Booth, 2004). Ignoring the "appropriate packaging" of information means it may not be provided in an appropriate format, at the right time, or in enough detail, thus compromising accessibility. According to the World Intellectual Property Organisation (WIPO), only 5% of what is available in print in the world is available in accessible media (World Intellectual Property Organisation, 2013(a)). The impact of this limitation is considered in the ISP model as "the ability to obtain and use information about any subject allows a person to choose a path from many alternatives, instead of being limited to a few perhaps unwanted or unfeasible choices" (Fullmer & Majumber, 1991:17). If the blind and visually impaired learner only has access to a few unwanted and unfeasible choices, it would impact on his/her ISP as well as his/her choice of what to do after the completion of Grade 12.

Various international and national documents, whose purpose is to ensure that information is made accessible to blind and visually impaired people, provide a legal platform to create greater access to accessible media for blind and visually impaired people. A selection of these documents are:

- i. The Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (World Intellectual Property Organisation, 2013(b));
- ii. The United Nations Convention of the Rights of People with Disabilities (World Intellectual Property Organisation, 2013(b));
- iii. The South African Library for the Blind Act, No. 91 of 1998.

Accessible media include large print, braille, Moon, analogue or digital audio and tactile material. Technological developments in recent years have made it possible to improve access to information through digital audio, text-to-speech software, and a variety of other products (Beverley, Bath & Barber, 2007:10). The definition of "accessibility" by the International Organisation for Standardisation (ISO) is useful for this study. ISO defines accessibility as... "the usability of a product, service, environment or facility by people with the broadest range

of capabilities" (International Organisation for Standardisation, 2003:ISO TS 16071; International Organisation for Standardisation, 2008: ISO 9241-171). The reference to "people with the widest range of capabilities" is essential. "Accessible format copy" is defined in *The Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled* in line with how accessible publications are for people with sight. The Treaty defines it as it is "a work in an alternative manner or form which gives a beneficiary person (as mentioned in the title of the Treaty) access to the work, including to permit the person to have access as feasibly and comfortably as a person without visual impairment or other print disability" (World Intellectual Property Organisation, 2013(b)).

1.11.4 Usability

A document may be accessible but not usable due to various reasons, e.g. relevance to the need of a person, or the content may be too simplistic, complicated or outdated. The terms "usability" and "accessibility" are closely related. This close relation is evident in the ISO definition of "accessibility" provided above, where the term "usability" is part of that definition. ISO does, however, define "usability" in their ISO 9241 Standard, where it is defined as... "the extent to which specified users can use a product, to achieve specified goals, with effectiveness, efficiency and satisfaction, in a specified context of use." (International Organisation for Standardisation, 1998: ISO 9241, Part 11). The reference to "specified users" and "specified context" is essential. Usability of a product or service for a person with sight will have a different meaning than for a blind and visually impaired person.

1.11.5 Assistive Technology

Assistive technologies are devices that people with disabilities use to enable them to do things that might be otherwise difficult or impossible to do. They range from wheelchairs to hardware and software which disabled people use daily at home, work and anywhere else. The Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) is a professional organisation committed to the promotion of the health and well-being of people with disabilities through technology solutions. Part of the work they do is the development of assistive technology standards (Rehabilitation Engineering and Assistive Technology Society of North America [RESNA], 2018). RESNA defines assistive technology as...

“any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customised, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.” The DAISY Consortium is a global consortium of organisations focussed on developing global solutions for accessible publishing and reading especially for blind and visually impaired people through the development of standards, guidelines and the promotion of reading systems for blind and visually impaired people. The following statement on the Daisy Website clarifies the power of assistive technologies and access when people with disabilities can say:

- I can access the same information at the same time and cost.
- I have great reading experience with eyes, ears or fingers.
- I can easily find the publication I want to read.
- More accessible mainstream publications with built-in accessibility are available for me to purchase or borrow.
- There are far more access-enhanced publications available to me.
- I have control over my reading experience.
- The accessible reading technologies, I use are affordable and easy to use (Daisy Consortium, 2018).

1.11.6 Career Information

Career information is defined in the South African schools’ context since it is around this topic that the information-seeking process of the sample group of Grade 12 learners was investigated. During a Cabinet Lekgotla in 2010, 12 outcomes with specific service delivery agreements were identified. The 5th Outcome referred to the skills of the country. It required the development of a standardised framework for cooperation on the provision of career guidance and information services in the country (South African Qualification Authority, 2012: 1). The Ministry of Higher Education and Training was tasked with this outcome. The Minister commissioned the South African Qualifications Authority (SAQA) with this task. SAQA published the *Framework for Cooperation in the Provision of Career Development (Information, Advice and Guidance) Services in South Africa* during October 2012 (South African Qualifications Authority, 2012). The location of career information is captured by SAQA in the following description, which is based on documentation published by the

Organisation for Economic Cooperation and Development, the European Union, and the World Bank.

"Career guidance refers to services and activities intended to assist individuals, of any age and at any point throughout their lives, to make educational, training, and occupational choices and to manage their careers. Such services may be found in schools, universities, and colleges, in training institutions, in public employment services, in the workplace, in the voluntary or community sector and the private sector. The activities may take place on an individual or group basis and may be face-to-face or at a distance (including helplines and web-based services). They include career information provision (in print, ICT-based and other forms), assessment and self-assessment tools, counselling interviews, career education programmes (to help individuals develop their self-awareness, opportunity awareness, and career management skills), taster programmes (to sample options before choosing them), work search programmes, and transition services." (South African Qualifications Authority, 2012:7).

Career information, therefore, falls within the Career Guidance domain. The following aspects are essential from the description above. Career Guidance is provided to assist individuals of any age throughout their lives to make educational, training, and occupational choices and to manage their career. Secondly, the description provides that one of the places where these services should be provided is in schools, hence the focus in this study on five schools for the blind. Thirdly it is stated that career information provision should be provided in the following formats: print, digital, and other forms. It is encouraging to note that provision is made in the SAQA statement for "other forms" which implies that formats suitable for blind and visually impaired people such as audio and braille products are included (South African Qualifications Authority, 2012:7).

In the same document, various initiatives are allocated to various government departments and organisations. Ten particular tasks are allocated to the National Department of Basic Education (DBE) and Provincial Education Departments. The following four tasks are germane. It is stated that the National and Provincial Departments must (researcher's emphasis):

- i. Assure quality of learning and teaching support materials (incl. textbooks) and ensure that the content of career guidance in the curriculum and teaching material is relevant;

- ii. Ensure that all schools have sufficient access to career guidance materials for all grades;
- iii. Ensure that every learner from Grade 10 to 12, and every school leaver, receives specific information and guidance in terms of post-school education options or in accessing work opportunities. This information should then be registered on the Learner Unit Record Information and Tracking System (LURITS). (This information will assist the development of a national indicator on school leaver destinations). Note: LURITS is not explained in the document but is a system which aims to collect (among other things) unit record data for each learner in the country from grade R through to Grade 12. Eventually, each learner will be assigned a unique learner tracking number which remains with the learner throughout their schooling.
- iv. Receive relevant career guidance material from stakeholders, government departments and entities and post such material in the Life Orientation learning space of the Thutong Education Portal¹, as well as the DBE website; (South African Qualification Authority, 2012:15)

1.11.7 Information Behaviour

Information behaviour is described as “those activities a person may engage in when identifying his or her own needs for information, seeking for such information in any way, and using and transferring that information” (Wilson, 1999:249). The description by Wilson is supported by Spink and Cole (2004:25) who say that information behaviour “relates to the study of human behaviours concerning information searching, foraging, retrieving, organising and use.” The study of the information-seeking process is, therefore, a specific focus area within the information behaviour domain.

1.11.8 Information-Seeking Behaviour

Concepts usually associated with information-seeking behaviour are information, information needs, information-seeking, information-seeking processes and information use (Ikoja-Odongo & Mostert, 2006:146). It is therefore regarded as an “umbrella” term indicating a

¹Thutong is an online platform to assist and support South African teachers to communicate, share and download educational material. The National Department of Basic Education hosts it. The link is <https://www.thutong.doe.gov.za/>

human behaviour that may be influenced by many factors such as educational level, disability, demographics and others. Information-seeking behaviour is defined by Wilson (2000(b):49) a leading researcher in information behaviour, as the purposive seeking for information because of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a printed book) or with computer-based systems (such as electronic databases or the World Wide Web).

1.11.9 Information Searching Behaviour

Wilson (2000(b):50) describes information searching behaviour as the “micro-level” of behaviour employed by the searcher in interacting with information systems of all kinds. It consists of all the interactions with the system, whether at the level of human-computer interaction (for example, use of the mouse and clicks on links). It also operates on the intellectual level (for example, adopting a Boolean search strategy or formulating the criteria for deciding which of two books selected from nearby places on a library shelf is most useful). Each activity will also involve cognitive acts, such as judging the relevance of data or information retrieved.

1.12 Chapter Outline

The study is presented in the following chapter structure:

Chapter 1: Introduction to the Study

A general background of the research problem is provided in this chapter. The research aim, objective and questions are presented as well as the definitions of the key terms applicable to the study.

Chapter 2: Literature review

This chapter is based on a literature review of general ISP research and ISP models. It analyses the views of various researchers to discover the similarities and differences of the various ISP models. Several ISP models described in the literature are explored to provide a full understanding of their rationale and so to serve as a point of departure in the empirical study.

Chapter 3: Theoretical Framework

The research of Wilson (1999), Kuhlthau (1991) and Moore (2000) is presented in this chapter. The first two researchers are leading theorists in the field of information behaviour. The research of Moore is vital because it resulted in a model of the information needs of blind and visually impaired people. The link between general information behaviour and the information needs of blind and visually impaired people are presented in this chapter. The analysis and synthesis of the models informed the development of the theoretical framework for the empirical research and associated gap analysis.

Chapter 4: Research Design and Methods

Chapter 4 reports on the preparation for the empirical research of the study. The preparation and planning of the investigation at the five research sites (five schools for the blind in three provinces) are described. The set of documents used during the interviews, i.e. the research instrument, letter to the Principal of the School, ethical clearance form, the information sheet providing information about the research and the assent form the learners had to sign are presented as annexures at the end of the thesis. The population is discussed in detail because of the unique problems surrounding researching with blind and visually impaired participants.

The method of data analysis and presentation of results are discussed in this chapter. The research process and adherence to acceptable research standards and ethical norms are also discussed. The research instrument is described in terms of structure, and the types of questions asked during the interview process.

Chapter 5: Research Findings

Chapter 5 describes and explains the findings of the empirical research. Two objectives are addressed in this chapter, i.e. to determine to what extent the empirical findings correlate or contrast with the information-seeking behaviour research by Kuhlthau (1991; 2008), Moore (2000) and Wilson (1999) discussed in Chapter 3. Secondly, the chapter identifies elements (generally or uniquely) that describe the information-seeking behaviour of blind and visually impaired Grade 12 learners; these are used to generate an Inclusive Information-Seeking Model (IISM).

The findings of each of the five schools are presented separately and then consolidated based on the categories identified during the framework analysis. General observations made during the research at the five schools are also presented. Trends emerging from the data are identified. Observations and linkages strengthen the consolidation to other research reported in the literature and recommendations where appropriate. The findings reported in this chapter serve as a reference for the next chapter, where they are mapped to the conceptual framework in a gap analysis. The methodology allows for the generation of an integrated and IISM for blind and visually impaired Grade 12 learners.

Chapter 6: Inclusive Information-Seeking Process Model

An Inclusive Information-Seeking Model (IISM) is proposed in this chapter. The rationale and academic approach followed to generate the proposed IISM are outlined, as are the intellectual products emerging as inputs from the analytical and synthetic processes described and justified. Accordingly, an IISM consisting of seven components is proposed with an explanation for each of the components.

Chapter 7: Conclusion

The final chapter of the thesis revisits the study objective and bring it in line with the findings and recommendations made in the study, and thus serves as a consolidation. Three recommendations are also made for further study.

References

All information sources cited and consulted are referenced according to the Harvard-UCT Handbook on Citation.

Annexures

The questionnaire, interview protocol and any other source material used during the research are presented at the end of the thesis in the Annexure Section.

Chapter 2: Literature Review

2.1 Introduction

This chapter examines information-seeking behaviour and related constructs which underpin the theoretical framework of the study, viz. the Information-Seeking Process Models presented in Chapter 3. In this chapter the literature review of information-seeking and information-seeking models are discussed in order to conceptualise the problem. Key related themes are identified concerning information-seeking, thus creating a platform on which to create the theoretical framework, presented in Chapter 3. Also, the literature relating to visually impaired people was explored in order to gain insight into their information-seeking world – identifying global and local challenges experienced by blind and visually impaired people. As the literature on these topics is explored, their relationship is analysed, which describes and explains the unique attributes of blind and visually impaired people.

2.2 Search strategy

Electronic databases and electronic journals at the libraries of the University of Cape Town as well as the University of Stellenbosch were used to identify and retrieve references for the literature review. They include the following: Current and Completed Research (South Africa), Dissertations and Theses A&I, Ebscohost (various), Emerald, WERIC, Google Scholar, Index to South African periodicals, JStor, Library, Information Science and Technology Abstracts, ProQuest, PubMed, South African Catalogue (South African books, journals and articles), SABINET South African journals, SciELO South Africa, Scopus, Social Science Citation Index, Web of Science. A study of the references in the sources thus retrieved suggested other useful references which were followed up. Table 2.1 provides a list of search terms used as well as the search techniques applied.

Table 2.1: Sample search strategies used

- | |
|--|
| <ol style="list-style-type: none">1. Blind (learners; students, scholars, people)x2. Visually impaired (learners; students, scholars, people)3. Blind or visually impaired (learners; students, scholars, people)4. Information-seeking |
|--|

5. Information-seeking behaviour/behaviour

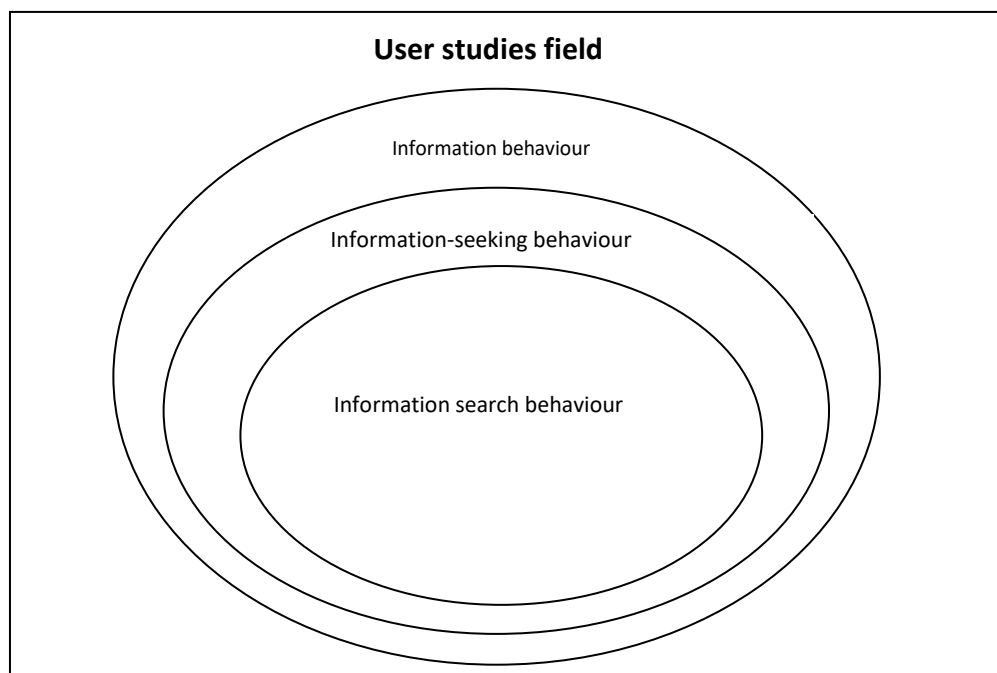
Information-seeking behaviour/behaviour model, truncation, proximity searching, phrase searching and wildcard search techniques were utilized during searches to yield as many results as possible.

Apart from searching electronic databases and journals, Internet searches particular to the research topic were also conducted. Also published and unpublished information was obtained from practitioners in the study field, e.g. information professionals, teachers, academics, blind people and visually impaired people as well as organisations serving blind people, e.g. the South African National Council for the Blind and related organisations.

2.3 Information Behaviour in Context

Wilson (2006:658) identifies two broad areas of research in library and information science, i.e. information retrieval and user studies. Research into information needs falls in the user studies field; and information behaviour, information-seeking behaviour and information search behaviour are all part of this field. This distinction is illustrated in Figure 2.1 below as a “nested model” contextualising information behaviour (Wilson, 1999:263) and redrafted by the researcher to fit the format of this document.

Figure 2.1: Wilson’s nested model of information behaviour



Information behaviour is a general research field defined by Bates (2010:2381) as follows: "... the term used in library and information science to refer to a sub-discipline that engages in a wide range of types of research conducted in order to understand the human relationship to information". Wilson (2000: 49) defines information behaviour as..." the totality of human behaviour in relation to sources and channels of information, including both active and passive information-seeking, and information use". Information search behaviour is a subset of information-seeking, mainly concerned with the interactions between an information user (with or without an intermediary) and computer-based information systems, of which information retrieval systems for textual data may be one type (Wilson, 1999).

Bates (2002: 2-4) elaborates on Wilson's reference to the "totality of human behaviour" by stating that information-seeking behaviour is more than just the reference to the social and humanistic elements. There could also be other relevant biological and anthropological factors affecting such behaviour. Bates proposes that people's social environment influences their information-seeking behaviour, e.g. children with absent parents will take longer to learn basic things like what to do when crossing a street. A person learns much from other people without consulting any authoritative information source in a library or elsewhere. These, Bates argues, are not the only factors influencing how people seek information. The biological (genetics and ethology) and anthropological elements, (physical and cultural) are underlying elements. To disregard these elements weakens our understanding of information-seeking behaviour (Bates, 2002:2). Many blind and visually impaired people become blind or visually impaired later in life due to illness, an accident or age. However, many are born blind or visually impaired or become like that due to genetic or other medical factors such as glaucoma and macular degeneration (Hu et al., 2017). Being blind or visually impaired influences their behaviour and how they understand and approach situations in life, such as information-seeking. From the anthropological perspective, according to Bates (2002), people tend to depend on information-seeking behaviours that come naturally to them (least effort), e.g. through their daily engagement with their environment and the people they encounter. Active information-seeking involves acquiring knowledge about information systems and how to access information. This way of information-seeking then becomes a different way to acquire information and requires a more deliberate intervention. This point made by Bates is essential when we consider blind and visually impaired people

because it encourages a study of information-seeking from a holistic point of view. Information-seeking refers to the person involved in the activity as well as to what is searched. Because we exist physically, biologically, socially, emotionally, and spiritually, it is not unreasonable, to estimate that we absorb perhaps 80% of all our knowledge through simply being aware, being conscious and sentient in our social context and physical environment (Bates, 2002). This statement applies to blind people and visually impaired people as well, with the exception that their visual impairment affects how they observe activities. It can, therefore, be assumed that the information searching process of blind and visually impaired people will be different from that of people who can observe their environment and take in information visually. Most blind and visually impaired people observe their environment and take in information through auditory observation and touch and then adjust their behaviour accordingly (Brewster, 2002:613).

2.4 Visual Perception

The ability to use sight to observe the environment and specifically to seek information is an essential consideration in an understanding of the situation of blind and visually impaired people. How a blind or visually impaired person observes his/her environment and engages with information resources, is not the same compared to people with the ability to see. It is suggested that this difference has a significant impact on the information-seeking process and is explored in this section.

The article by Dörk, Carpendale and Williamson (2011:5) describes the role of visual perception during information-seeking. While there is no reference to blind and visually impaired people, it serves as an indication of what the challenges are for a person with no or limited sight and its impact on the information-seeking process. The article explains that visual perception is based on the city or information flaneur²analogy which highlights activities such as gaining a sense of overview/orientation and seeing details of information resources/space. People with sight can at a “glance” observe what is on a page holistically or on the computer screen and very quickly decide to accept or dismiss the information. This option is different

² Dörk, Carpendale and Williamson (2011:1) use the metaphor of the city or information flaneur as a person making sense of a city as he/she moves through it. The Flaneur is curious, creative, and critical in information-seeking. Their paper is an attempt to move away from negative concepts such as needs and problems and towards positive information experiences.

for blind and visually impaired people who can only “see” what is on a page where their fingers touch the braille, or by listening to an audio version of the document. On a computer, it is possible to move the cursor to the next line without having to wait for the speech software to finish reading. Even speeding up the speech software, is still a slower and more cumbersome process scanning through a document compared to a person with sight.

The paper by Pirolli and Card (1999) about the information foraging theory is in line with the paper above. Their theory of information foraging is an attempt to understand how strategies and technologies for information-seeking, gathering, and consumption are adapted to the availability of information in the environment. The model highlights the concepts of the information source, the location where the information can be found, the strategies with which it is found and the tools available to find it as well as the benefits gained when the information is applied. The Information Foraging theory assumes that people adapt to the constraints and problems they face when they have to perform tasks that require the processing of external information-bearing resources. In the case of blind and visually impaired people, their constraint is their disability when engaging in information-seeking activities and the interaction they have with accessible or other related information sources available to them.

The literature provides various insights into how people observe things. Wolfe (2003) describes how people find an item in a visual world with many distractions and how a visual search works. The theory of inhibition of return explains that once a person finds what he/she is looking for (peripheral location) there is then a delayed response to processing other stimuli near that location (Klein, 2000:138-139). Woods proposes the principle of person-computer interaction, called visual momentum, which is about the mechanisms that support the identification of “relevant” data in human perception when looking at information as it appears on several displays on the computer (Woods, 1984). Visual perception is described by Dörk, Carpendale and Williamson (2011) in terms of element detection, visual momentum and information visualization. These concepts are expanded in the relevant three sections below. Sahib, Tombros & Stockman (2012) researched the impact of speech-based screen readers on the information-seeking behaviour of 15 blind searchers compared to 15 searchers with sight. The information-seeking process of the blind searchers was slower compared to that of the sighted people in the study. The use of assistive technologies as part of the

information-seeking process is described by Schiff (2009). Blind people must first learn how to use the technology and then learn what the technology can do for them in their information-seeking. In all the papers referred to above three elements were identified that frame how people observe things that may have an impact on information-seeking. These three elements assist us to understand the difference in observation between people with sight and those without sight, as set out below.

Element Detection

Visual perception gives a person the ability to discern certain elements based on different visual features rapidly. This ability is linked to what is described as pre-attentive processing, which functions across the whole visual field in parallel, followed by attentive processing that works serially on individual locations (Wolfe, 2003:70). Research by Klein (2000, 138-139; 145) found that the reaction time during a visual search of previously scanned locations (e.g. a book or journal article) has a slower response time than those not yet scanned. This experience is called “inhibition of return” (IOR). It explains how our perceptual system responds to new information. It is a mechanism that encourages orienting towards new locations by orienting away from already inspected items. An observation the researcher of this research makes from the abovementioned studies on pre-attentive processing and inhibition of return is that it provides important understanding into how a person’s perceptual system favours both visually significant and newer elements. This differentiation, i.e. the response time between information sources previously interacted with as opposed to new information sources, will be different for blind and visually impaired people. The response time for blind and visually impaired people will not be experienced in this way because braille reading is only focused on what the fingers are touching at any given moment. With audio listening, the listener can only move through text at the pace of the narration or the speed of the playback device which he/she is using. This observation about braille reading is supported by Khochen-Bagshaw (2011) and Simon & Huertas (1998); the various disadvantages of audiobooks are discussed by Sharma (2019) highlighting the point that scanning and skipping content in an audiobook is challenging for blind and visually impaired people. Reading braille and listening to an audio device does not permit the pre-attentive processing available to sighted people.

Visual Momentum

Woods (1984: 230-231) defines visual momentum as a measure of a user's ability to extract information across displays, i.e. information as displayed on computer screens. Woods (1984:230) makes a distinction between high and low visual momentum. High visual momentum is where an individual can read through a document and easily and quickly absorb and understand the information. The method of presentation is related to the rate at which a person can extract information or make sense of the information presented. For some people, the same display will be a challenge, whereas others will have no problem with its apprehension. Low visual momentum takes more mental effort to comprehend and relate to the way the information is presented and to understand the information itself (Dörk, Carpendale & Williamson, 2011: 5; Woods, 1984: 231). Various techniques to improve visual momentum are suggested by the above researchers, e.g. animated techniques, detail-on-demand overlays and zoomable interfaces. None of these techniques is of assistance to blind and visually impaired people with the result that blind and visually impaired people will have low visual momentum due to the way audio and braille products are presented. The research of Sahib, Tombros and Stockman (2012:377) confirms this in their study of challenges experienced by blind people using screen readers. Because screen readers process web pages sequentially from top to bottom and read them in a synthesized voice, "searching can be considered to be a challenging problem for visually impaired users." However, the researcher notes that in his experience, the Daisy format, i.e. a digitally accessible audiobook, and other digital products and materials, provides an option to improve visual momentum for blind and visually impaired people. This possible because of navigational options that are inherent to the design of these products. Accessible content, accessible reading material, accessible e-content, accessible information are all terms that generally describe material that is produced in the EPUB 3 format of which the Daisy digital talking books are an example ("The Daisy Planet...", 2012). It is important to note that not all digital reading material conforms to accessibility norms and standards such as navigational features, page numbering, structuring of the book and other features.

Information Visualisation

According to Dörk, Carpendale and Williamson (2011:4-5), information-seeking interfaces should be designed in such a way as to gain maximum benefit for a person during the information-seeking process. The challenge is to design search interfaces that help information seekers gain and maintain a sense of orientation. According to these authors, information visualisations are computer-supported, interactive, visual representation of abstract data to assist the reader to understand the information (Dörk, Carpendale and Williamson, 2011:4-5). Some examples of the above include overviews, zooming, filtering and detail-on-demand. These are all focused on enhancing the way information is presented to the reader and to make the information-seeking process more interactive. The formats available to blind and visually impaired people are less flexible in their capacity to assist in information visualisation. Sahib, Tombros and Stockman (2012:387) researched the search behaviour of 15 sighted searchers compared to that of 15 visually impaired searchers in the United Kingdom. Their research confirms that the lack of contextual information gives the visually impaired searcher limited exploratory options, describing how participants in their research visited a significantly lower number of external links compared to those visited by a sighted searcher. The layout of braille pages, to use a different example, could be regarded as a type of visualisation. Catenazzi, Landoni & Gibb (1993) state that there are two ways of navigating text in a book. One way is to navigate hierarchically (from the Table of Contents down to the units of text). Another way of navigation is transversally (references across the text). Following this reasoning, it is proposed by this researcher that the hierarchical structural segments of a braille book, for example, should assist a blind or visually impaired person to “gain and maintain orientation” in the book. Segments such as content pages, foreword and chapter or section headings and any other structural segments to structure the contents of the braille book are important cues to assist a blind person to navigate content in the book. With digital formats, it is also possible to build in features to speed up the interaction with the information source if it complies with accessibility standards, e.g. the World Wide Web Consortium (W3C) standards for Websites. The W3C and the emergence of the Web Accessibility Initiative have provided a set of Web Content Accessibility Guidelines to help Web innovators design effective, accessible sites (<https://www.w3.org/standards/webdesign/accessibility>). Also, the standards developed by

the Daisy Consortium (<http://www.daisy.org/daisy-epub-3-developments>) to create accessible books, i.e. EPUB3, provide an additional option to “visualise” or make content more accessible for blind and visually impaired people. Unfortunately, however, Schiff (2009:4) reports on some websites that are designed to be very friendly and attractive to sighted people overstep the bounds of what can be read by users of assistive technology. The American Foundation for the Blind ("Site-Wide Problems...", 2019) refers to several challenges web designers should keep in mind in order to avoid inaccessible web sites. Some of the challenges are images of text versus text, elements that prevent wrapping of text, placement of navigation links on the web page, and the naming of links.

2.5 Information-seeking Behaviour: An Overview

A starting point of any information-seeking behaviour is based on the uncertainty which is experienced by an individual. This is supported by theories in the literature as an indication of a gap (Dervin, 1983), an anomalous state of knowledge (Belkin, Oddy & Brooks, 1982), or a problem (Eisenberg & Berkowitz, 1990). The problem arises from a situation that leads to a discrepancy between how the individual understands life around him/her and something or a phenomenon that cannot be fitted or linked to that world view, to make it understandable. Because of this misfit, the individual experiences an information problem or information need that requires to be addressed.

In addition to the information-seeking problem-solving approach, other interdisciplinary approaches have emerged, e.g. the everyday life information-seeking approach including sense-making (Savolainen (2010); Clemens & Cushing, 2010:22) and information foraging (Pirolli & Card, 1999(4):643-675; Spink & Cole, 2006:25; Khapre & Saleem Basha 2012:383). Other approaches include the cognitive approach and the social approach (Pettigrew, Fidel & Bruce, 2001; Matusiak, 2006:480). The cognitive approach is concerned with how people think and behave concerning information needs. It focusses on the information processing of the individual. The social approach is concerned with interpersonal relationships and social space with information needs.

2.6 Information-seeking Behaviour Research: New Approaches

Case (2002), in his book on information-seeking and information behaviour, covers more than 50 years of research and more than 1,300 citations in this field. As a general research field, therefore, there is a sizable body of research to consider. The original literature review was amplified by further searching, resulting in the expansion and enrichment of the research – see Section 2.6.5. To provide context or a point of reference for this study, the work of four researchers relevant to the objective of this study is used to provide a broad view of the main findings and different areas of emphasis made by researchers of information-seeking behaviour. The potential significance of these works for this study is provided in each of the following sections.

2.6.1 Information-seeking as a Holistic Activity

Dörk, Carpendale and Williamson (2011:1) propose a new approach to information-seeking based on interdisciplinary research and many Web developments such as increased browser functionality, enriched media formats, semantic data and user mobility. This environment provides enabling technologies for a new approach to information-seeking especially one that makes better use of human perceptual, cognitive and affective skills.

The research of Dörk, Carpendale and Williamson (2011:1) summarises previous research about information-seeking, focusing on a human-centred understanding of the search process. Information-seeking is typically contextualised according to tasks, e.g. pursuing goals to overcome information needs, knowledge gaps, uncertainty and problems. They note that the “casual” perspective of information-seeking, e.g. play and pleasure, is rarely considered in research. They suggest that research needs to look beyond keyword search (Dörk, Carpendale and Williamson 2011:1). They call for a holistic and positive perspective on information-seeking that brings together the “mind, heart, senses, and soul of the information seeker” (Dörk, Carpendale and Williamson 2011:1). This view is in line with Wilson’s description of information behaviour as “the totality of human behaviour” described in Section 2.3 of this chapter (Wilson, 2000:49). Experience-based considerations in the context of information-seeking are regarded as necessary, i.e. the interface design should be informed by consideration of experience, imagination and reflection. They acknowledge the

cognitive, perceptual and affective aspects of information-seeking. However, through the image of the information flaneur, they propose “explorability” as a new dimension in the information-seeking process (Dörk, Carpendale and Williamson 2011:8). Exportability is the creative and positive creation of an interface to interact with information. The exploratory behaviours of the information seeker are not captured by current Information-seeking Models according to these researchers.

Dörk, Carpendale and Williamson (2011:1) provide an insightful overview in their article about the range and focus areas covered by various researchers into information-seeking. They comment on the category of research focusing on the information seeker as a person with information needs and the need to survive. They also refer to the role of knowledge gaps (Dervin, 1983) and uncertainty (Kuhlthau, 1991:366) during the information-seeking process. The value which a person attaches to an information resource as part of sense-making is an additional factor to be considered (Pirulli & Card 1999:650). They propose that the way that people make sense of the information that they gather is, amongst other factors, influenced by the value they place on the information resource. The more useful the information is, the higher the perceived value of that resource is for the person seeking information. Studies on serendipitous, leisurely and everyday information-seeking indicate that many information practices are driven by interest, desire, and an open mind.

The relevance of the proposition made by Dörk, Carpendale and Williamson (2011) for this study is that information-seeking should be understood as a holistic approach taking account of all the senses of the person involved in the context. This holistic view is an essential aspect since most blind, and visually impaired people (some blind and visually impaired people have additional disabilities) must rely on only four of the five human senses when seeking information. The point is that without all senses available, a person will have to adapt his/her information-seeking behaviour compared to a person with all senses available.

2.6.2 Information-seeking Stages

Ellis (1989(a):171-212) describes the various information-seeking stages that provide a broad structure of the information-seeking process. These stages were considered during the empirical research of this study to assess to what extent they applied to blind and visually impaired people. The stages are:

- i. Starting – this relates to the behaviours of a person who begins information-seeking and may include asking a friend for information.
- ii. Chaining – following up any reference or citations in published material that may lead to the next information source.
- iii. Browsing – this refers to searching methods, semi-structured or semi-directed in the process of seeking information.
- iv. Differentiating – is the process of using differences between various information sources to allow decisions about what to keep as relevant and discard the rest. It involves comparing and selecting sources based on quality, expertise, accuracy, and many other qualities.
- v. Monitoring – this stage refers to the person’s effort to keep up-to-date with current awareness searching.
- vi. Extracting – refers to identifying information in an information source based on relevance to the information problem.
- vii. Verifying – involves the person’s checking the accuracy of the information selected.
- viii. Ending – includes all the activities performed to ensure that relevant information has not been missed or misunderstood.

The stages mentioned above are placed by Choo, Detlor & Turnbull (2000) in the context of on-line searching. It is assumed at this stage and will be verified during the empirical research, that blind and visually impaired learners' access most of their career-related information electronically. The explanation by Choo, Detlor & Turnbull (2000) therefore, provides a proper contextualisation of the stages in a practical setting. “Starting” takes place when a person uses a browser to find a search engine to begin the search process. “Chaining” takes place when search results are found, and hypertext links are followed to related information resources. Scanning the web pages of the sources selected for a possible answer to the information problem is “browsing”. Bookmarking or saving suitable sources for future reference or going back to specific sites is “differentiating”. “Monitoring” takes place when the person subscribes to services that will alert him/her of new information in his/her area of interest. “Extracting” takes place once a site has been found and searched for information applicable to the problem. Once information is found, “verifying” takes place to establish its

accuracy. “Ending” is making sure or double-checking everything to ensure that all areas are covered, and something is not missed in the process.

Wilson (1999:255) refers to the elements of starting, chaining, extracting, verifying, and ending as micro-analysis of information behaviour; while browsing, monitoring, and differentiating represent a macro-analysis of information behaviour. Ellis’s model is based on empirical research and has been tested in subsequent studies (Wilson, 1999:254).

The importance of Ellis’s (1989 & 1989(a)) work for this study is the identification of the various stages of the information-seeking process which gives structure to the information-seeking process which may be regarded as one activity. It also allows one to compare his analysis with that of other researchers in the field. For instance, there are similarities between the model proposed by Ellis and Wilson's (1999:254) four information behaviour stages and Kuhlthau's (1991, 2008) six information-seeking process stages. It is acknowledged that Ellis’s model is not the only one available. Other models are discussed in the following sections of this chapter. The six steps proposition provides a useful reference to establish whether they are also applicable to blind and visually impaired people and their information environment.

2.6.3 Sense-making

Dervin’s sense-making theory has been developed and evolved since 1972 (Dervin, 1998) and is not regarded as an Information-seeking Model (Dervin, 1983). Sense-making incorporates the following four elements:

- i) a “situation” in time and space defining the context in which the information problems arise;
- ii) a “gap”, identifying the difference between the contextual situation and the desired situation (uncertainty is relevant here);
- iii) an “outcome”, i.e. the consequences of the sense-making process, and
- iv) a “bridge”, i.e. closing the gap between situation and outcome (Wilson, 1999:253).

Dervin's research is relevant for this study since “sense-making” is at the core of all information-seeking behaviour. Dervin's four elements form the basis of information-seeking research in general, viz. to find a solution to an information problem. The four elements are

closely related to information-seeking behaviours: each of the four elements requires a particular behaviour to satisfy an information need.

To “find meaning” implies a process of making sense of information and through this process, an individual then forms a personal point of view. Kuhlthau (1991:361) makes the point that the individual is actively involved in finding meaning which fits in with what the person already knows and "which is not necessarily the same answer for all, but sense-making within a personal frame of reference". The reference to “personal frame of reference” is essential. Blindness isolates people from many experiences, and even if the person experiences an activity with others, it will be from a personal frame of reference. Social isolation experienced by blind people is confirmed by Vuletić, Šarlija and Benjak (2016) who examined the quality of life of 142 blind people living in Croatia. Because blindness usually leads to social isolation and exclusion, the references developed by blind and visually impaired people may be different from those with sight. How blind and visually impaired people, therefore, make sense of the information they access may, therefore, be different. The distinction is not only between blind and sighted people but also among blind and visually impaired people themselves. The study by Vuletić, Šarlija and Benjak (2016) determined that there is a distinction between the quality of life of partially sighted people compared to that of blind people. One of the reasons for this is explained by Massof (2006) who states that the difference may be due to blind people viewing their blindness as their characteristic trait while partially sighted people try to function as if they have healthy sight.

Savolainen (2010) has also examined information-seeking-sense-making in everyday life information-seeking (ELIS), i.e. where people daily orient themselves to solve problems which are not directly connected with the performance of their occupational tasks. One conclusion is that situational or contextual factors affect information-seeking and cannot be ignored. This conclusion applies to all people but especially relevant in the case of blind and visually impaired people. Seyama (2014) studied nine visually impaired students' information-seeking behaviours, with particular emphasis on their information needs, seeking and use at the University of KwaZulu-Natal as part of a Master's degree. The study found that the information needs of blind and visually impaired students were not met or take a long time to be met due to barriers encountered and the laborious information-seeking process. Much of the information has to be repackaged to make it accessible. Although the students

eventually found what they were looking for, it required a lot of time and energy (Seyama, 2014:13).

2.6.4 Interactive Feedback

The research of Spink (1997:382-394) is focussed on the importance of interactive feedback in the information retrieval model. Although not directly related to the purpose of this study, its concept of “feedback” by the information-user to the information-provider is relevant. Spink (1997:382) describes interactive feedback as the user’s evaluation of the information retrieval system that he/she used to search for information, their judgement of it and query modification to make information retrieval (information-seeking) successful. Query modification links with stage four of the six information-seeking stages identified by Kuhlthau (1991:366-368) called “formulation”. This stage is where the information-seeker cannot find the information he/she were looking for and must adjust or reformulate the information query to find better results.

Without feedback about the information-seeking process and information-seeking tools used, there can be no interaction or understanding (between the user and the supplier of the service); this may affect the improvement or adjustment of the information retrieval or information-seeking process by the information service. Research into the information-seeking process identifies user judgements, search tactics, interactive feedback loops, and cycles as constituting the search process of a person in interaction with an information retrieval system (Spink, 1997:392). Spink (1997) from the University of North Texas in the U.S.A. researched feedback as a critical component in the interactive model, i.e. the cognitive, interactive and situational aspects of information retrieval. Her research is based on the information retrieval activities of 40 “self-selected” academic users. Blind people were not part of this study. Spink (1997) identified five different interactive feedback activities, i.e., Content Relevance Feedback; Term Relevance Feedback; Magnitude Feedback; Tactical Review Feedback and Term Review Feedback. These feedback activities are indicative that an information user may use various ways to provide feedback on various aspects of the information-seeking process. It is the responsibility of the information provider, e.g. the library and other organisations active in the information sector, to accommodate these feedback options as part of its strategy to improve the information-seeking experience of the

individual. It is essential to note the observation of Wilson (1999:262) about user judgements and search tactics in the context of this model; this corresponds with the research of Spink (1997) as mentioned earlier. Wilson (1999:262) states that judgements made by users are usually based upon prior experience gained in the overall activity of information-seeking.

The research of Spink (1997:382-394) has broad applicability for people searching for information. The difference between blind and visually impaired people is that their information experience and behaviour is limited by the availability of accessible or available information resources. They are also affected by technologies (assistive devices and software) to make access to information possible. The research of Sahib, Tombros & Stockman (2012), as well as that of Schiff (2009) in this regard, as discussed earlier in Section 2.4 refers. It is, therefore, safe to state that the information-seeking behaviour of blind and visually impaired people is different from that of sighted people but that the interactive feedback of their information-seeking process or experience is essential. Wilson and Walsh (1996:1) acknowledge this through the following general statement applicable to all people seeking information: "The lack of an easily accessible source may inhibit information-seeking altogether or may impose higher cost than the enquirer is prepared to pay."

2.6.5 Alternative Views and models

The models referred to in this, and other chapters are not without criticism. For example, McKenzie (2003:19) criticises "research-based" models such as the models of Kuhlthau (1993) and Ellis (1989). A discussion of Kuhlthau's model is provided in Chapter 3, Section 3.5, and reference is made to Ellis' model later in this section. According to McKenzie (2003:19), such models are limited in their ability to describe everyday life information (ELIS). The implication of this, according to McKenzie, is that the focus is on active information-seeking to the neglect of less-directed practices. McKenzie's criticism is that many Information-seeking Models are limited in their ability to describe ELIS. It appears as if not much has changed in terms of the landscape of information-seeking behaviour models since McKenzie made this statement in 2003. In an article published 16 years after McKenzie's article, Kundu (2017:392) published an article where one of the objectives of the article was to "get an idea about various information behaviour models", nine information-seeking behaviour models, selected randomly, are listed and compared. The author notes that the numerous information behaviour models

developed by information scientist to date – 2017 – “are not necessarily applicable to all user groups” (Kundu, 2017:394). This observation supports the motivation for this study focussing on the information-seeking behaviour of blind and visually impaired Grade 12 learners. The nine models discussed by Kundu (2017) are presented in Table 2.2 in a modified version from the one presented in his article. The models are presented in chronological order.

Table 2.2: Listing of various Information-Seeking Behaviour Models

Model Name	Summary of Model
1981 and 1996: Wilson’s Information Behaviour Models.	<p>The model offers a three-fold view of information-seeking:</p> <ol style="list-style-type: none"> 1. The context of the seeker. 2. The “system” employed (which might be manual or machine and navigated either personally or by an intermediary). 3. The information resources that might be used.
1983: Dervin's Sense-Making Theory/Model	<p>The model consists of:</p> <ol style="list-style-type: none"> 1. A set of assumptions about human reality. It includes assumptions on moving, process, discontinuity, situationality, gap bridging and information-seeking. 2. A theoretical perspective. 3. A methodological approach. 4. A set of research methods. <p>The theory offers four constituent elements:</p> <ol style="list-style-type: none"> 1. A situation in time and space. 2. A gap between the contextual and the desired situation. 3. An outcome – the consequences of the sense-making process. 4. A bridge – the means of closing the gap between the situation and the outcome.
1983: Blom’s Task Performance Model	<p>The task performance model sees the scientific discipline, environmental factors, and the scientist as three groups of variables. The three groups mutually influence one another. Also, each group</p>

Model Name	Summary of Model
	affects the task performance of the scientist as well as his/her information needs.
1989: Ellis's Behavioural Model of Information-seeking	<p>This model identifies eight features of information-seeking behaviour which characterise the information-seeking patterns of the social scientist, scientist and engineers:</p> <ol style="list-style-type: none"> 1. Starting/surveying 2. Chaining 3. Browsing 4. Differentiating 5. Filtering 6. Monitoring 7. Extracting 8. Ending
1991: Kuhlthau's Information Search Process (ISP) model	<p>The ISP model incorporates three realms: the affective (feelings), the cognitive (thoughts) and the physical (actions) common to each stage:</p> <ol style="list-style-type: none"> 1. Initiation 2. Selection 3. Pre-focus 4. Focus formulation 5. Collection 6. Search closure
1994: Sandstrom's Optimal Foraging Theory	Optimal Foraging Theory is a collection of methodologies or heuristic tools to clarify how and why individuals make the strategic choices they do.
1996: Leckie, Pettigrew and Sylvian's Model of the Information-seeking Professionals	<p>Assumes that roles and associate tasks are undertaken by professionals in their daily practice that generate information needs, which in turn give rise to the information-seeking process. Information-seeking is greatly influenced by several interacting variables, which can affect the outcome of information use. The model comprises six components:</p> <ol style="list-style-type: none"> 1. Work roles

Model Name	Summary of Model
	<ol style="list-style-type: none"> 2. Associated tasks 3. Characteristics of information needs and the factors affecting information-seeking 4. Awareness 5. Sources 6. Outcomes
1998: Cheuk Way-Yi's Information-Seeking and Using Process Model	<p>The model is made up of seven different situations:</p> <ol style="list-style-type: none"> 1. Task initiating situation. 2. Focus forming situation. 3. Ideas assuming situation. 4. Ideas confirming situation. 5. Ideas rejecting situation. 6. Ideas finalising situation. 7. Passing on ideas situation
1998: Choo's Behavioural Model of Information-seeking on the Web.	<p>It is an extension of Ellis's Behavioural Information-seeking Model. It consists of four main modes:</p> <ol style="list-style-type: none"> 1. Undirected viewing. 2. Conditioned viewing. 3. Informal search. 4. Formal search

The above list of information-seeking models does not imply that there are no other information-seeking models in the research literature. For instance, the information-seeking behaviour model of Krikelas (1983) not mentioned in the table makes a distinction between less-directed "information gathering" and more-directed "information searching" activities (1983). The list presented by Kundu (2017) confirms, however, that the information-seeking behaviour models of Kuhlthau (1991) and Wilson (1981 & 1996) are still included in a review article more than 38 years after Wilson's model appeared in the literature in 1981. The list of models presented by Kundu (2017) also confirms that there are information-seeking behaviour models other than those of Kuhlthau and Wilson. It is interesting to note that Kundu (2017) does not list any information-seeking behaviour model that appeared in the literature after 2003 – the date of McKenzie's article. This observation does not imply that no other information-seeking behaviour models were published in the literature after 2003. Section 2.6.5.1 explores some additional information-seeking models.

2.6.5.1 Recent information-seeking behaviour models discussed in the literature

Meho and Tibbo (2003) revised Ellis's information-seeking behaviour model of social scientists, which includes six generic features as noted in Table 2.2. The authors surveyed 60 faculty members of a social science faculty studying stateless nations as the study population. Their study confirmed Ellis's model but found that four additional features (accessing, networking, verifying and information managing) should be added to those identified by Ellis. The model proposed by the researchers' groups all the features into four interrelated stages: searching, accessing, processing, and ending.

Al-Suqri (2013) proposed an integrated model of science information-seeking behaviour. Al-Suqri argues that information-seeking models are mostly based on research conducted in Western countries and at a time when electronic methods of information-seeking were still uncommon. The model proposed by Al-Suqri is an integrated model of social science information-seeking behaviour based on a synthesis of the established models of Ellis (1989), Kuhlthau (1991) and Wilson (1999). It tests the ability of this integrated model to describe present-day information-seeking among 367 social science scholars at the faculty at Sultan Qaboos University in Oman. The research was based on e-mail interviews, face-to-face interviews and focus group discussions. It was found that the information-seeking practices of the study sample could be readily matched to the stages of the model. They suggest that, in general terms, information-seeking behaviour follows universally applicable stages, and that the model can be applied to current-day information-seeking despite changes in the information environment. Additional dimensions are included in the model relating to the format and location of information resources since these contextual factors were found to have an essential influence on the process of information-seeking among the study participants.

Kamba (2015) proposes an information-seeking behaviour model focussing on the information-seeking behaviour of school teachers in the public primary schools of rural areas of Nigeria. Findings showed that the information-seeking behaviour of these school teachers has the following hierarchical activities: asking, checking, searching, scanning/browsing, referring and extracting, focusing and evaluating, reviewing, integrating the information found, using the information and transferring information to their students

or colleagues. Some of these activities correspond with a number of the models referenced in Table 2.2, e.g. Kuhlthau's, Ellis's, Cheuk Wai-Yi's.

Lee, Hyun and Baek (2015) proposed a consumer Health Information-seeking Model. Their model was developed regarding the research of Kuhlthau (1991). With the emergence of an ageing society, interest in a healthy life is increasing, and the health information-seeking by users through web-sites or Social Network Services is rising. Their model is developed around three dimensions, i.e. action, thought and feeling. The authors argue that this model applies to user communication and information service areas and that it can be used as a methodology for inferring human feelings or context.

The research of Kuhlthau, Wilson and Ellis still serves as reference material in information-seeking behaviour research and models. The primary trend uncovered in this section is that various researchers continue to apply the research of the Kuhlthau, Wilson and Ellis in a specific field of interest and add additional aspects of the information-seeking process to make it applicable to their field of study.

To conclude this section on alternative views of information-seeking models the criticism raised by McKenzie (2003) is noted, viz. that information-seeking models, exemplified by Kuhlthau's (1991) and Ellis's (1989(a)), are derived from studies of scholars or professionals. These models describe systematic information searches in universities or the workplace, and they tend to analyse only one current need, thus failing to provide a holistic consideration of various information behaviours individuals use daily. McKenzie (2003:20) criticises the models' reliance on cognitive processes suggesting that models should also consider the constructionist discourse analytic approach to study information seekers in their social context. This implies that researchers should also consider analysing the ways accounts are constructed and made to appear factual, and the discursive functions that accounts are meant to perform. This study of the blind and visually impaired Grade 12 learners does not apply the principles of this approach other than studying the learners in a particular social context, i.e. the school.

2.7 Researching information-seeking by blind and visually impaired people

The scarcity of research focussing on the information-seeking behaviour and or models of blind and visually impaired people is noted in Chapter 1, Section 1.3.and 1.5 earlier. Fatima and Kumari (2017) provide an overview of research focussing on information-seeking by blind and visually impaired people. A summary of the research is provided below.

The study by Williamson, Albrecht, Schauder and Bow (2002) focussed on the information-seeking behaviour of 20 blind and visually impaired people using the Internet in their personal and social lives. The research carried out in Australia addressed information sources, the issues of information needs and the role of the internet to meet the information needs of the focus group as well as the obstacles they encounter when using the Internet.

The research of Charles (2005) focussed on people with disabilities and not just blind and visually impaired people. Her recommendation that library staff be trained to serve people living with disabilities is endorsed in the current study. Library staff should know how to fulfil the information needs and requirements of disabled people who use different resources, services and assistive technologies.

Kouroupetroglou, Salampasis and Manitsaris (2008) researched the navigation behaviour of 15 blind and visually impaired adults in Greece through the use of the Browsing Shortcuts (BSs) mechanism when using the Internet. It was found that this mechanism positively affected the sample group of blind users' information-seeking behaviour compared to those who were not exposed to the BSs. It was also determined that in new Browsing Shortcuts there were certain rudiments in every web page and that every web page was different in purpose and content and offered lists of shortcuts regularly.

Kwak and Bae (2009) researched the accessibility of information provided by the LG Digital Talking Book Library in Korea. This service is a “ubiquitous” service available to blind and visually impaired people using their mobile phones. The researchers found that blind people faced many challenges such as late updates of new publications, subject areas not covered in a balanced manner and the lack of educational content.

The ICT skills and needs of blind and visually impaired people aged 10 to 14 years and above 55 years of age in the Netherlands were researched by Van Puffelen (2009). It was found that young users needed ICT skills to communicate with other people and for their educational needs. The elderly group needed ICT skills for communication purposes and to access government institutions and service organisations applicable to them.

Bishop and Rhind (2011) researched the factors which are enablers or barriers for blind and visually impaired people to participate in Higher Education Institutions in the United Kingdom. The research centred on the following four themes. Student attitude which includes self-identity and engagement with support. Institutional support includes central services support. External support which includes travelling to and from campus and financial support. The fourth factor is others' attitude which includes parental and staff attitude towards them.

Sahib (2011) researched the information-seeking behaviour of blind people using the Web. The research was done through a comparative analysis of the information-seeking behaviour of 15 blind and 15 sighted people, respectively. A search interface was designed and implemented that was accessible for blind and visually impaired people. The author identified significant differences during various stages of the information-seeking process, e.g. query formulation and results exploration. It was determined that the query formulation of the blind sample group of people was different. They also submitted fewer queries and their exploratory behaviour during searches was limited.

The research of Lucky and Achebe (2013) into the delivery of information services rendered to blind and visually impaired people by the Hope for the Blind Foundation in Nigeria confirmed their lack of opportunities to access information. The authors acknowledged the impact of information and communication technology to address this challenge.

This overview of research focussing on the information needs and behaviour of blind and visually impaired people of different ages and different backgrounds confirms the accessibility challenges experienced by this group of people. The crucial role of technology to assist with addressing the challenges is raised frequently. It also touches on aspects such as support services rendered by trained information professionals. These and other aspects are raised in the discussion of the IISM in Chapter 6, Section 6.7.

The overviews confirm that while there is research into Information-seeking and information behaviour of blind and visually impaired people, it is scarce. There is research into information-seeking behaviour models focussing on blind and visually impaired people. The study by Moore (2002) is a study of social information needs by blind and visually impaired people. The information-seeking behaviour models proposed by Kuhlthau (1991) and Wilson (1999) could, therefore, be linked to Moore's research to provide a sound basis for the IISM as proposed in Chapter 6, Section 6.7 of this study

2.8 Summary

Chapter 2 provides a broad overview of the literature about information behaviour and the information-seeking process (ISP). Where applicable, its relevance for blind and visually impaired people is pointed out. The ability to visually observe information during the information-seeking process is highlighted, noting how it works for blind and visually impaired people, an aspect not always considered in information-seeking research. Information-seeking is a holistic activity that can be described in stages and where the individual must assign meaning or value to the information found, is also highlighted. Part of this sense-making process is based on what is described as interactive feedback. This process is based on the prior experiences of an individual, thus impacting on the current information-seeking process. The focus of Chapter 2 moves from general to specific information-seeking research, identifying the candidate models to be used to develop the theoretical framework of this study.

Chapter 3: Theoretical framework

3.1 Introduction

The purpose of Chapter 3 is to present two Information-seeking Models, as well as a model of the information needs of blind and visually impaired people that serve as the theoretical framework of this study. Various researchers (as referenced in Chapter 2) have proposed Information-seeking Models to explain how people, in general, seek information. The focus of this chapter is on the research of Wilson (1996), Kuhlthau (1991) and Moore (2000), which synthesised provide the theoretical underpinning of the study. The reason for using the models of Wilson (1996) and Kuhlthau (1991) in this regard is explained in Chapter 1, Section 1.8. The reasons for selecting the research of Wilson and Kuhlthau are summarised below:

1. Wilson's model focuses more on the information need and Information-seeking. Kuhlthau's model centres on the information search and the affective changes in the process of searching for information. It was anticipated that this research would identify the information needs of blind and visually impaired Grade 12 learners relevant to their plans after completing Matriculation and understand how they seek the information. It was anticipated that blind learners would experience various feelings during the Information-seeking process because of the challenges they have to overcome and to share that with the researcher.
2. The focus of this study is on selected Schools for the Blind in South Africa and particularly Grade 12 learners in those schools. Kuhlthau's model was mostly tested in secondary schools (Kuhlthau, 2008). It was anticipated that this link would bring valuable insights to this study.
3. The scarcity of research available about the Information-seeking needs and behaviour and or related models for blind and visually impaired people are raised in Chapter 1, Section 1.3 and 1.5. The selection of Moore's research of the social information needs of blind people is, therefore, applicable to the sample group selected for this study and serves as a valuable reference. An additional motivation is that Moore's research is regarded as the most appropriate to the information behaviour of visually impaired people according to Beverley, Bath and Barber (2007:12).

4. The researcher assumed that a combination of the Wilson (1999) and Kuhlthau (1991) models and the research of Moore would be valuable in generating an understanding of the Information-seeking behaviour of blind and visually impaired people in a particular environment.
5. The Information-seeking behaviour research of Wilson (1999) and Kuhlthau's (1991) is the most cited in the Library and Information Science Literature. Ikoja-Odonga & Mostert (2006) calls them "major studies" and Wilson (1999) and Kuhlthau (1991) are acknowledged as the leading experts in the field of Information-seeking (Rutgers School of Communication and Information, 2013; Blessinger & Frasier, 2007; Wilson, 1999(b); Ellis, 2005). Both models could, therefore, be used with confidence because of their authoritative standing in the literature. Wilson first published his model in 1981 and refined it successively in 1994, 1996, 1997 and 1999 (Majyambere, 2012). Kuhlthau first published her research in 1991 and revisited the Information Search Process in 2008 (Kuhlthau, Heinstrom & Todd, 2008). The research of the two researchers have stood the test of time, and they also revisited their research to refine it and to make it more current.
6. Lastly, the reason for using the research of these three researchers is based on the proposition that their research jointly provides an inclusive and comprehensive view of Information-seeking behaviour. This study used the research of the three researchers drawing on the judgement of Fourie who makes the point that there are strengths and weaknesses in each model and that the "models complement each other, as opposed to contradicting or replacing each other." (Fourie, 2004:67).

This chapter thus explores the relationships between the models and investigates how they incorporate findings from the Information-seeking research reported in the literature. The chapter also assesses to what extent the models proposed by the three researchers are different or similar. This assessment is done through a comparative analysis in Section 3.7 and summarised in Tables 3.1, 3.4 and 3.6 in the chapter. The analysis of the three models yields an assessment of how they accommodate the circumstances, needs, challenges and the requirements of blind and visually impaired learners. Accordingly, special attention is given to the following factors. It considers the extent to which the models may be applied to the Information-seeking behaviour of blind and visually impaired learners in terms of:

- i. External or personal factors
- ii. Different information formats
- iii. Accessibility of information
- iv. Different Information-seeking behaviours among learners
- v. The level of importance attached to the information required
- vi. Locality or the geographical location of the information seeker and schools
- vii. Specific Information-seeking challenges and realities of blind and visually impaired Grade 12 learners and their influence on the learners
- viii. The impact of different literacies of blind and visually impaired Grade 12 learners affecting the Information-seeking process, e.g. braille, auditory, information, computer and other literacies

The above factors are built into the research instrument.

3.2 Information-seeking Research

In their study of the applicability of two information models of Information-seeking to visually impaired people looking for health care information, Beverley, Bath and Barber (2007:11) noted that most studies exclude this category of information users (2007: 11). They refer to the well-established information models such as those proposed by Wilson (1981); Dervin, (1983); Krikelas (1983); Ellis (1989(a)); Kuhlthau (1991); Ellis, Cox & Hall (1993); Johnson (1997); Leckie, Pettigrew & Sylvian (1996) and Wilson (1997). It is noted that the research has been applied to health care and social service contexts such as the research of Buckland and Dawson (2007) of low-income households in South East England. The activities consist of several stages a person goes through before he/she submits a claim. Information is required during these stages to allow the person to move to the next stage.

Not all information behaviour models attempt to describe the same set of phenomena or activities. They instead provide different aspects of the overall problem and are thus complementary (Wilson 1999: 267). Spink and Cole (2006) reviewed three interdisciplinary approaches to how people seek information, i.e. Information-seeking-sense-making, information foraging, and problem-solution perspective on Information-seeking. In addition to these three Information-seeking approaches Spink and Cole (2006) propose a fourth approach based on information use theory, viz. an integrated model of these different

approaches. Their proposal of integration is expressed in the proposed Inclusive Information-Seeking Model (IISM) as discussed in Chapter 6, Section 6.7

Wilson (1999:262) distinguishes between models that describe behavioural patterns during the actual search activity – the model of Ellis described earlier is an example (Ellis, 1989(a):171-212). The second type of model presents stages of activity, within which the behavioural patterns may occur – Kuhlthau’s (1991) model serves as an example as described below. The information needs model of Moore (2002) is used because it is based on the information needs of blind and visually impaired people specifically. Information needs are the departure point for Information-seeking behaviour and processes.

Information-seeking research is therefore discussed from three perspectives, i.e. Information-seeking needs, Information-seeking process and Information-seeking behaviour to motivate for an inclusive Information-seeking approach.

3.3 Moore’s research: Information-seeking needs

According to Beverley, Bath and Barber (2007:12), Moore’s research into the social information needs of blind and visually impaired people is the most relevant research for this group of people. Moore’s research was developed directly in response to a literature review of the information needs of visually impaired people.

Moore (2000:5) describes social information as information that people need to live their daily lives. This type of information corresponds with the everyday life Information-seeking (ELIS) concept proposed by Savolainen (2010:2735) referred to in Chapter 2, Section 2.6.3. It is also consistent with Chatman’s theory of life in the round (1999) which she developed when studying disadvantaged people living in unjustifiable circumstances and small worlds. A life-in-the-round is a life where certain things “are implicitly understood” (Chatman, 1999:212) by people living in a small world. A “small world” is defined by the beliefs shared by its members who act following generally recognised norms of the people sharing that world view (Chatman, 1999:209,212). McKenzie (2003:19) also refers to the ELIS concept indicating that current Information-seeking Models are limited in their ability to describe ELIS, which is seen as a form of non-active Information-seeking.

Dörk, Carpendale and Williamson (2011:4) make it clear that Information-seeking is not always carried out by knowledge workers interacting with information systems. There is also a more extensive range of information practices in everyday life, i.e. people looking for information daily. This practice refers to the informal way that people, in general, look for information. The Information-seeking Model of Kuhlthau (1991) also supports this, indicating that confirms the fact that people use the information for problem-solving and creativity in the workplace and daily living. Through “connecting”, people establish an association with people, locations, and institutions which gradually leads to “interacting” where they request or encounter information (Kuhlthau, 2008:66)—connecting and interacting feature actively in most technology-theories in the digital age. A few examples are Siemens’s connectivism learning theory (2013) and Koh’s (2015) radical change learning theory. For instance, Siemens (2013:1) puts a theory forward, indicating that connectivism, learning and interaction with information occurs in a technology-based social space. This theory is founded on the principle of information development cycle between individuals, organisations and digital social networks. Siemens (2013:6-7) argues that knowledge is generated by connections formed from actions and experiences within networked technologies. When an individual requires knowledge, “the ability to plug into sources to meet the requirements becomes a vital skill” (Siemens, 2013:6-7).

The relevance of this is that blind and visually impaired people depend mostly on technology to access information (Van Puffelen, 2009). The types of technologies and software used by them often differ from what people with sight may use. The use of JAWS (screen reading software) and ZoomText (screen magnification software) to assist blind and visually impaired people in accessing and navigating digital information on a computer are just two examples (Brophy & Craven, 2007). Access to technologies and the skill to use these technologies to access information is, therefore, a critical component in the Information-seeking process of a blind and visually impaired person. This component is part of the information literacy of blind people and something that they should be trained in as proposed by Nwafor and Chigbu (2017).

McKenzie (2003:20) talks about the holistic consideration of the variety of information behaviours individuals describe in their everyday lives. Information-seeking is, therefore, not a singular activity or an activity that always follows the same sequential and logical steps.

Career information for Grade 12 learners fits this description. It is the information required to make a career or study decision that will impact their daily lives in the future where information is available from a variety of formal and informal sources.

3.3.1 Six Dimensions

Moore (2002:297) describes social information as having six different dimensions that are related to one another. Below, each dimension of these information needs is briefly highlighted and discussed in the context of this study, i.e. the Information-seeking of blind and visually impaired Grader 12 learners.

(1) **Function** (why do people need information?) People require information as citizens to play a meaningful and active role in society and to hold public and private organisations accountable for what they do. Information is also required for consumption, i.e. to have information that will allow a person to decide between choices of products, services, and various other options. These choices apply to the Grade 12 learners who must determine what it is they would like to do after completing Matriculation. It is a critical decision that needs to be made and should be based on sound information obtained from various sources.

(2) **Form** (what kind of information do people need?) The description in brackets provided by Moore (2000:8) is misleading since it suggests the various types of information a person may be seeking, e.g. personal, work-related, entertainment and for studies to name few. From the detailed description of this information need, it is evident that Moore describes how people acquire information. Moore continues his description of this information need as follows: one way of obtaining information is through “environmental scanning”, i.e. to become aware of information and to absorb the information presented in various ways and formats randomly and unconsciously (Moore 2000:8). This behaviour correlates with the “passive undirected mode” of acquiring information as proposed by Wilson (1999:256-257). People who are unaware that they may be missing information in this manner become socially excluded, such as blind and visually impaired people who cannot easily access information sources in the way that sighted people do. Moore (2000) observes that information alone is not enough to trigger an activity or even to

provide an answer to a question. The reason is that people may have an attitudinal barrier preventing them from doing anything with the information they have. To be overwhelmed by too much information is a common phenomenon (Melgoza, Mennel & Gyeszly, 2002:32; Heylighen, 2002). The reduction, representing and re-packaging of information becomes essential to enable people to make decisions or to take action (Cox, 2008:5). How information is presented to blind and visually impaired people is vital to ensure they derive value from it. If it is not in an accessible format, there will be no value in it for blind and visually impaired people. It would require repackaging, e.g. someone should read the information to them or read the information and give them a verbal interpretation of the information.

(3) **Clusters** (what do people need information about?)

People may need information based on Maslow's hierarchy of five needs, i.e. physiological, safety, social, esteem and self-actualisation needs (Moore 2000:10). It is also possible that a particular event in a person's life will determine the type of information required (Moore, 2000:10-11). In the case of this study, such an event is the decision what to do after completing Grade 12. Moore (2000:11) proposes families of information needs, i.e. information needs that are self-contained and circumscribed (these needs have one single focus, e.g. to make a choice between employer A or B or to decide whether to go to tertiary institution A or B). Other needs may be more complex because of added dimensions and relationships, e.g. what are the different degree options offered by a university, and how does that relate to the interests of a person? Once the primary information need is identified, a person can identify all the related needs associated with the primary information need. A learner may, therefore, start with an information need to find out where he/she could go to study for a specific qualification. However, then in the process, learn that they need information on funding, accommodation, the Grade 12 subjects required for the programme and a host of other related information that may facilitate decision-making. Moore's (2000:11) proposal to consider information needs as families correlate closely to the Passive Directed mode of Information-seeking by Bates (2002:4) as discussed in Section 3.6 of this chapter. The proposal by Moore (2002:300) to view information needs in terms of families is an analogy to explain

the difference between simple and complex information needs. For example, one that is “self-contained and circumscribed” is like a single-person family unit. Information needed to obtain a passport is provided as an example. More complex information needs have added dimensions and relationships but are still tightly defined as a nuclear family. Moore's example, in this case, can be viewed as information required by a person who wants to enter higher education. It is a simple question but raises several issues and further information needs.

(4) Agents (who initiates the information activity?)

Moore's model focuses on three different initiators of the information activity: information seekers, information providers and information processors. Information seekers actively or passively absorb information from their environment (2002:300-301). Moore (2002:301) describes the action of “passively absorb” as the amount of information that exists in the environment that we absorb, i.e. without effort. He uses the example of a person travelling on the London Underground who will be aware of the latest cinema releases because of advertisements observed on the way. The information can be acquired in this manner in cases where there was no explicit effort to look for it. This behaviour is in line with the Passive Undirected mode of Information-seeking proposed by Bates (2002:4) and discussed in Section 3.6 of this chapter. This manner of discovering information is a crucial component in the way people find information.

Dörk, Carpendale and Williamson (2011:4) describe serendipity as the process where information is found by accident when there is no explicit effort to look for the information nor an expectation to find it. Foster and Ford (2003: 321, 336) found that inter-disciplinary researchers widely experienced serendipity, although it does not figure prominently in current models of Information-seeking or behaviour. Serendipity could play a role in the information behaviour of blind and visually impaired people since it is a universal human phenomenon.

The Information-seeking capabilities of a person, as well as the information service they approach, will determine whether information can be accessed successfully and satisfactorily. People comfortable with their Information-seeking abilities and who

has access to an excellent public library are more likely to obtain the information that they are looking for compared to a person lacking the Information-seeking ability and with no access to a library. The absorption of information in the general environment is equally important in terms of access to information. A blind and visually impaired person is less aware of opportunities advertised on posters in the street or magazines than a sighted person and hence will miss opportunities for information exposure. This reality is confirmed in a study by Saumure and Given (2004:35) about the information behaviour of visually impaired post-secondary students. The researchers quote the following quote from a student: "If the teacher were to mention something in the class – write it on the board or provide it on a handout – without verbally discussing it, then that information would pass me by". See Chapter 2, Section 2.7 for an overview of research about information-seeking by blind and visually impaired people.

Information providers make information available mostly in an active manner, i.e. they raise awareness about the information or the source through marketing campaigns, advertising and book launch, for example. Such information sources are made available to the public through information processors, i.e. those agencies/intermediaries that collect information and make it available in various ways suitable and easily accessible by users. Libraries are an example of one such processor of information (Moore, 2002:301) as well as Non-Governmental Organisations, Government Departments, Consumer Bureaus, Research agencies, Councils specialising in various fields, e.g. language, people with disabilities, churches and many other organisations able to provide information applicable to their working environment to people requesting such information as part of the service mandate of the organisation.

The acquired information is assessed in terms of whether it can be trusted and whether the information is from an authoritative source. Because blind and visually impaired people are less able to visualise and evaluate specific sources of information, they are more inclined to trust more traditional sources. Beverley, Bath and Barber (2007:26) make a distinction between formal and informal information

resources. Their study found that the blind and visually impaired people that they interviewed favoured health care professionals and the local society for the blind as information sources. The reason for this is that there is less risk in it for the blind and visually impaired person, i.e. they can trust the information source without worrying about the authority of the information. Also, participants acquired information and knowledge through less formal contacts, e.g. via local support groups and friends and family (Beverley, Bath & Barber, 2007:26). See Chapter 2, Section 2.7 for an overview of other research about the information seeking behaviour of blind people.

An additional factor identified by Beverley, Bath and Barber (2007:23) is not only the quality of the information but also the quantity. It is vital to access a range of information sources. Although information needs can be highly individualistic, the scope and nature of the information resources people use are dependent on the individual. This choice is linked with Dimension 5 below.

(5) Users (how do needs differ between different groups of people?)

Blind and visually impaired people, like all people, do not constitute a homogeneous group of people with the same kind of information needs. They may be a generic group of people due to their disability, but they are unique individuals, each one with their information requirements. To put it in a practical context: the different conditions that lead to blindness or a visual impairment, as well as the current living conditions or realities as blind or visually impaired people, differ among people living with this disability. These two factors may affect the way that people's disability and also information needs develop over time. A person who is blind from birth may have different information needs and ways to address those needs compared to a person who becomes blind or visually impaired later in his/her adult life due, for example, to age-related macular degeneration.

Moore (2000:54-58) identifies seven different groups of blind and visually impaired people that can be thought of as having a common core of information needs based on specific characteristics, i.e.:

- i. the degree of their visual impairment;

- ii. people who became visually impaired recently;
- iii. older people;
- iv. children;
- v. people with multiple disabilities;
- vi. people of ethnic minorities;
- vii. carers (parents and adults looking after blind and visually impaired people) and
- viii. professionals.

Each of these groups may have very particular as well as overlapping information needs. This insight was borne in mind during the empirical part of this study, viz. the danger of approaching the learners as a homogeneous group on account of their shared disability, and the consequent need to consider personal and social circumstances.

In addition to the above finding by Moore (2000), Beverley, Bath and Barber (2007:22) identified several factors or “intervening variables” – a concept proposed by Wilson (1999:256) and referred to in Chapter 1, Table 1.1- that may affect a visually impaired person’s information behaviour. These relate to:

- i. the presence of other health conditions or disabilities;
- ii. people’s understanding of the word “information”;
- iii. their interactions with information providers;
- iv. their degree of independence;
- v. the support they received from friends and family;
- vi. their acceptance of their visual impairment as well as their awareness of other visual impairments and
- vii. their willingness and ability to pay for assistive devices, adaptations and software where applicable.

Other disabilities, e.g. deafness or being in a wheelchair, also influence their lifestyle and therefore, how they access and engage with information.

(6) Mechanisms (which mechanisms can be used to meet information needs?)

The final dimension is of interest to this study because of the various types of technologies a blind and visually impaired learner must use to access information. To address the information needs of blind and visually impaired people, information professionals must think of different options that will enable information to be: recorded and stored, transmitted, and communicated, copied and reproduced, and tailored and customised (Moore, 2000:59). This requirement was also raised by Beverley, Bath and Barber (2007:25). They suggested that information should be provided in the preferred format of an individual, such as on audiotape, on CD-ROM, via email and on the Internet as few examples. The quote from a post-secondary student interviewed by Saumure and Given (2004:34) confirms Moore's mechanism principle: "I like textbooks on tape, summaries and glossaries in braille, and assignments on a disc."

Moore's (2000) information need model provides a valuable analytical tool to structure and understand the information needs of blind and visually impaired people. These dimensions were considered during the empirical research of this study, Chapter 4.

3.4 Wilson's Research: Information-seeking Behaviour

Information-seeking behaviour is described from the problem-solving perspective by Wilson (1999:265-266). The user identifies and defines a need or problem before seeking information to meet the demand and solve the problem. For the individual to move from a state of uncertainty to certainty, he/she moves through four stages, i.e.

- i. Problem identification (What kind of problem do I have?)
- ii. Problem definition (Exactly what is the nature of my problem?)
- iii. Problem resolution (How do I find the answer to my problem?)
- iv. Solution statement (This is the answer to the problem, or this is how to deal with the problem.)

During any of these stages, it is essential to define the problem accurately; otherwise, the individual will need to return to the problem identification stage.

Moore (2002:297) describes social information as having six different dimensions that are related to one another. The six dimensions have a certain correspondence with Wilson's (1999:265-266) four problem-solving stages mentioned above. The dimensions proposed by Moore are function, form, cluster, agents, users and mechanism. Table 3.1 indicates the correlation between the work of Wilson (Information-seeking behaviour) and Moore (Information-seeking needs).

Table 3.1: Correlation of research between Wilson (1999) and Moore (2000)

Wilson's four problem-solving stages	Moore's six information need dimensions
<ul style="list-style-type: none"> • Problem identification (What kind of problem do I have?) 	<ul style="list-style-type: none"> • Function: why do people need information? • Form: what kind of information do people need?
<ul style="list-style-type: none"> • Problem definition (Exactly what is the nature of my problem?) 	<ul style="list-style-type: none"> • Clusters: what information do people need? • Users: how do needs differ between different groups?
<ul style="list-style-type: none"> • Problem resolution (How do I find the answer to my problem?) 	<ul style="list-style-type: none"> • Agents: who initiates the information activity? • Mechanisms: which mechanisms can be used to meet information needs?
<ul style="list-style-type: none"> • Solution statement (The answer to the problem or how to deal with the problem.) 	<ul style="list-style-type: none"> • Agents: who initiates the information activity?

Wilson's Information-seeking Model (1999) is rooted in Information-seeking behaviour which is a consequence of a need perceived by an information user and which is addressed through engaging with formal or informal information sources or services. Some of the more informal sources consulted may involve other people through information exchange. Information perceived as useful may be passed on to other people, as well as being used by the information seeker. Sometimes the activity may be successful or unsuccessful. If the search activity does not address the need of the information seeker, he/she may restart the search process (Wilson, 1999:251). In most instances, a person will adjust his/her search strategy based on the failed search process as pointed out by Spink and Cole (2006:31) and discussed in Section 3.6 of this chapter.

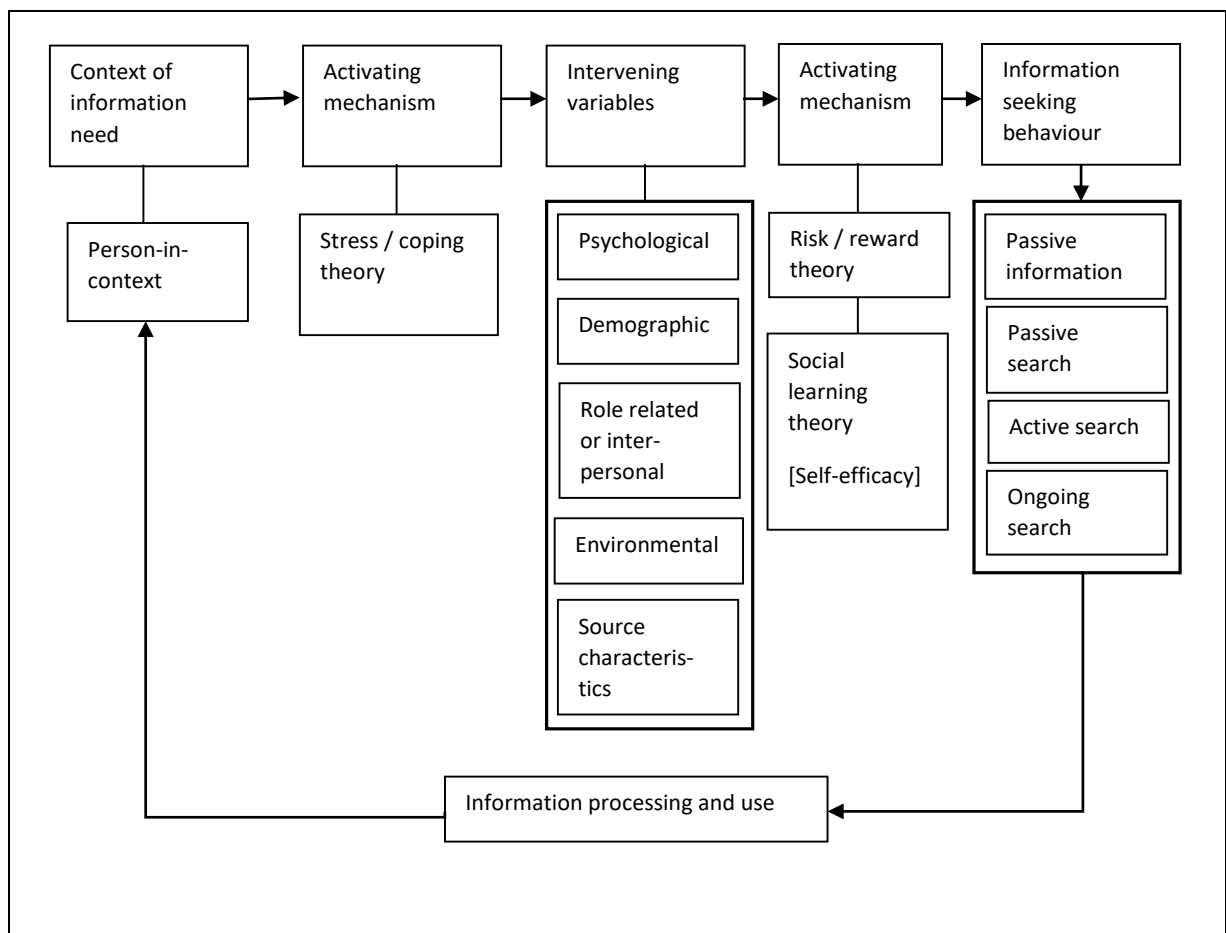
Wilson's (1981:3) information behaviour model is based upon two propositions. The first proposition is that an information need is not a primary need, but a secondary need that arises out of needs of a more fundamental kind. The second proposition is that in the effort to discover information to satisfy a need, the enquirer is likely to encounter different types of barriers. Basic needs, defined as physiological, cognitive, or affective, link with Moore's (2000:10-11) research information needs based on Maslow's hierarchy of five needs. The individual may determine the context of these needs or the role demanded of the individual's work or life, or the environments – political, economic, socio-cultural, technological, environmental, and legal (Wilson, 1999:252).

The reference to “barrier” is of interest to this study since blind and visually impaired people need to overcome several barriers when seeking information. Some of these barriers may be the lack of accessible information resources, lack of assistive technologies, lack of training to use technologies and software to access information, mobility challenges to mention a few that have been identified in the literature (Seyama, 2014:3). These barriers are very closely associated with the context of the person. In the environment of this study, the personal background of the Grade 12 learners could also include factors such as:

- i. their identification of a suitable career;
- ii. the availability of support systems at school or home to find the information they are looking for;
- iii. their level of independence as a blind and visually impaired person;
- iv. access to funding to pursue their studies;
- v. the readiness of a tertiary institution or place of work to accommodate a blind and visually impaired person.

Wilson refers to this model as a “macro” model in terms of how the information needs arise and what may prevent or aid the actual search for information. Wilson presented a revised model in 1999 based on research from various fields other than information science such as decision-making, psychology, innovation, health communication and consumer research (Wilson 1999:256). A schematic representation of the model is presented in Figure 3.1. which was redrafted without any changes from the source to fit the format and layout of this document.

Figure 3.1 Wilson’s revised model of information behaviour (1999:257)



The significant revisions are:

“Barriers” is replaced by “intervening variables” and “Information-seeking behaviour” is identified and expanded. “Intervening variables” suggest that their impact may be supportive in information use as well as preventive. Information-seeking behaviour is shown to consist of more types than in the original. “Information processing and use” is identified as a necessary element of the feedback loop.

The concept of “self-efficacy” arises from the comprehensive research by Albert Bandura (1997:3) who described the concept as a person's belief in his/her capabilities to organise and execute the courses of action required to produce specific achievements. Self-efficacy beliefs are essential in the choice of behaviours including occupations, relationships and our day-to-day practices, the amount of effort a person is willing to exercise, perseverance to achieve a set objective and a host of other behaviours.

“Intervening variables” are factors that may act as a barrier or as facilitators during the Information-seeking process. Such variables may influence the information behaviour of a blind and visually impaired person, e.g.:

- i. Age;
- ii. Gender;
- iii. ethnic origin;
- iv. their social role, e.g. their degree of independence;
- v. support available from friends and family, and involvement with local support groups;
- vi. the individual's psychological status, e.g. acceptance of having a visual impairment;
- vii. environmental variables, e.g. access to the Internet;
- viii. willingness and ability to pay for assistive devices and software;
- ix. environmental adaptations and equipment;
- x. the characteristics of the sources, e.g. availability of information in alternative formats;
- xi. reliability of the information provided;
- xii. interactions with different information providers.

Research by Beverley, Bath and Barber (2007:26) showed that in addition to Wilson’s list of “intervening variables” (1999:257), there are various other variables that must be considered when addressing the information behaviour of visually impaired people. These relate to the person’s visual impairment, e.g.:

- i. type of visual impairment;
- ii. degree and length of living with the impairment;
- iii. the individual’s social role (degree of independence);
- iv. psychological status (e.g. acceptance of visual impairment);
- v. environmental variables (e.g. access to the Internet, willingness and ability to pay for assistive devices);
- vi. characteristics of information sources (e.g. availability of information in alternative formats) and

- vii. the presence of other health conditions and disabilities may all have an impact on the information behaviour of an individual (Beverley, Bath & Barber, 2007:26).

Wilson (2006:659) draws attention to the interrelationships among the various concepts in the field of user studies. He makes the point that Information-seeking behaviour starts at the point of the recognition by a user of an information need. To address that need the user then engages formal information systems, e.g. libraries and on-line services. Wilson (2006:659) also observes that the user may seek information from other people. People as an information source is an essential observation in the Information-seeking behaviour of blind and visually impaired people. One reason for this is that people are more accessible and more comfortable to interact with than formal information systems. The danger of this is that people are not always the most accurate or reliable source of information. "Failure" as identified by Wilson (cf Figure 3.1) under "Information processing and use" may occur if the person finding the information, uses the information but does not verify it. The success or failure of the information can only be tested once it is "used" thus proving if it satisfies the information need.

Wilson (2006:661-662) describes the difficulties associated with researching and understanding the concept of "information needs". He identifies a vital concept which he calls the "user's lifeworld". The "lifeworld" is described as "the totality of experiences centred upon the individual as an information user." It is safe to say that the life world of a blind and visually impaired person, with particular reference to Information-seeking, is markedly different from that of sighted people as indicated in Chapter 2, Section 2.6.3 (Seyama, 2014:13). Blind and visually impaired people need several assistive devices to access information and training on how to use these technologies and equipment. They are not able to visually observe and learn from that as they go through life – human beings absorb as much as 80% of information about their immediate environment through sight (Willetts, 1997). Although we are all dependent on other people to assist us from time to time, this dependency is much higher for blind and visually impaired people. Also, published information is not as easily accessible to blind and visually impaired people as it is for sighted people. This reality links up with Wilson's acknowledgement of the existence of personal, interpersonal, and environmental barriers to Information-seeking (2006:664).

The following statement by Wilson (2006:667) concludes this section on Information-seeking behaviour and emphasises the importance of the user and practical implication of the information science study field:

“An 'information science' firmly founded upon an understanding of information users in the context of their work or social life is also likely to be of more use to the information practitioner, by pointing the way to practical innovations in information services, and potentially beneficial associations with other communication or information-related subsystems.”

This statement acknowledges that the context of the user should be understood to develop services and products that will assist the user. If librarians adopt this and any other information professional rendering information services to people, then Information-seeking for blind and visually impaired people will become an integrated and accessible experience based on universal design and service delivery. Wilson (2006:668) believes that this will result in a genuinely user-oriented, innovative, experimental information profession and any other organisation whose mandate includes the rendering of information services to people where the marginality of the information service is reduced. It is, therefore, important that the Information-seeking behaviour of users are understood in context.

3.5 Kuhlthau's Information Search Process Model

Kuhlthau (1991:366-368) proposed a model of the Information-seeking process consisting of six stages. What makes the model unique is that with each stage, there are certain feelings, thoughts and actions. The stages are:

- i. Initiation – This is when a person for the first time becomes aware that his/she lacks knowledge or understanding about something. At this stage, the person may feel anxious about this lack of knowledge.
- ii. Selection – The person identifies and selects the topic to be investigated or the approach to be pursued. The person may begin to feel optimistic about addressing the problem of lack of knowledge.
- iii. Exploration – The person investigates the information to gain a better understanding of the topic that he/she is studying. The person will engage with several information sources and link those to existing knowledge. Feelings of confusion and uncertainty

are still prevalent since the person is still searching for information. A person may also again feel overwhelmed at this stage and abandon the Information-seeking process.

- iv. Formulation – During this stage, the person finds or begins to find the information required. Feelings of uncertainty start to change to certainty and clarity about the focus of the topic and the required information.
- v. Collection – This is the stage of the Information-seeking process where there is optimal interaction between the information seeker and the information system he/she is using. Information is now gathered about the topic. The person is also now in a better position to articulate what he/she is looking for and can distinguish between information addressing his/her information need and that which does not.
- vi. Presentation – The person is satisfied with the information found and is now able to use the information for intended purposes. The person may also be disappointed because the process may have yielded no information.

Kuhlthau's (1991) Information Searching Model (ISP) incorporates three realms: the affective (feelings experienced), the cognitive (thoughts concerning both process and content), and the physical (actions undertaken during the search activity). A person moves from the initial state of information need to the goal state of resolution by a series of choices made through a complex interplay within these three realms. The criteria for making these choices are influenced as much by environmental constraints, such as prior experience, knowledge, and interest, information available, requirements of the problem, and time allotted for resolution, as by the relevance of the content of the information retrieved (Kuhlthau 1991:362).

Table 3.2 provides a summary of the six stages as well as the associated "realms" (Kuhlthau, 1991:367)

Table 3.2: Kuhlthau’s Information Search Process (ISP)

Stages in ISP	Feeling common to stage	Thoughts common to stage	Actions common to stage	Appropriate task
1. Initiation	Uncertainty	General/vague	Seeking background information	Recognise
2. Selection	Optimism	-	Seeking relevant information	Identify
3. Exploration	Confusion/Frustration/Doubt	-	Seeking relevant information	Investigate
4. Formulation	Clarity	Narrowed / clearer		Formulate
5. Collection	Sense of direction/confidence	Increase interest	Seeking relevance of focussed information	Gather
6. Presentation	Relief/Satisfaction of Disappointment	Clearer of focussed	-	Complete

Dörk, Carpendale and Williamson (2011:3-4) describe Kuhlthau’s Information-seeking process as a linear model, illustrating Information-seeking as a progression of stages indicating the information seeker’s feelings, thoughts, and actions. Kuhlthau (1991) highlighted a conceptual mismatch between a person’s information problems (“uncertainty and confusion”) and a system’s view of information (“certainty and order”).

Kuhlthau’s (1991) research and model is essential to consider as part of the theoretical framework of this study. Her research is vital for this study since she was among the first to investigate the affective aspects of the Information-seeking process (ISP) along with the cognitive and physical aspects. Saumure and Given (2004) studied the information behaviours

of six blind or visually impaired undergraduate students in Canada at one university (four students) and one community college (two students). Their research focussed on the student's perception of their ability to locate and use information through the use of adaptive technologies. Data were collected through semi-structured interviews with a variety of open-ended questions. This research of Saumure and Given (2004) provides evidence that students often experience feelings of frustration, despair, embarrassment, isolation, stress, and many other feelings during their Information-seeking process. Blind and visually impaired students must overcome several challenges such as inaccessible formats, people not willing to assist them or to waste much time to access the information in preparation for an assignment (Seyama, 2014:9). The role of feelings in the Information-seeking process is explored during the empirical part of this study.

Before the introduction of Kuhlthau's (1991) ISP, the affective dimension of Information-seeking had not been fully recognised in library and information services and systems or user education. Wilson (1999:255) identifies Kuhlthau's (1999) perspective in this regard as "phenomenological" rather than cognitive. The development of her ISP model as a theoretical framework is the result of more than two decades of research. This research began with a qualitative study of secondary school students and the emergence of an initial model that was verified and refined through quantitative and longitudinal methods with diverse library users and further developed in case studies of people in the workplace (Wilson, 1999:256).

Kuhlthau's (1991) ISP model presents a holistic view of Information-seeking from the user's perspective in six stages: initiation, selection, exploration, formulation, collection, and presentation. The six-stage model of the ISP incorporates three realms of experience: the affective (feelings), the cognitive (thoughts) and the physical (actions) common to each stage. Kuhlthau makes it clear that all the stages are not always present in every Information-seeking task. The absence of certain stages may be due to factors such as task complexity. The concept of routine and complex tasks is critical for understanding how and when the six stages will manifest in the ISP (Kuhlthau, 2008:69).

Users' experiences and expectations in complex Information-seeking tasks are not easily accommodated by the information systems available to them because they do not sufficiently support their process of construction in the information search process (Kuhlthau, 2008:70).

Although this paraphrase of Kuhlthau is meant to apply to the general information seeker, it is especially applicable to blind and visually impaired people. The broadest meaning of an “information system” refers to discovery tools, professional information specialists providing an information service as well as the format of the information source. If an information system exists with lacunae in any of the three broad elements, it will not support blind and visually impaired people in their "process of construction in the information process".

Kuhlthau's (2008:70) model applies to people who are in the process of constructing meaning from a variety of information sources. The model captures the sequential holistic experience of the process of creating sense from multiple sources of information that link information behaviour to information impact. Kuhlthau (2008:71) observes that in everyday life Information-seeking (ELIS) as described by Savolainen (2010) and mentioned in Chapter 1, Section 1.9, a range of tasks require constructing meaning from a variety of sources of information over an extended period. Blind and visually impaired people do not have the luxury of a variety of sources, and this affects their Information-seeking tasks. Also, due to the limited number of resources available, the Information-seeking time will be much longer than for sighted people. The material must first be transcribed, or they must find a sighted person to read the document to them before they can interpret and apply or reject the information.

Before the formulation stage, users are likely to experience heightened uncertainty in the face of conflicting, inconsistent information since it requires thought, construction, and interpretation (Kuhlthau, 2008:68). This experience of uncertainty is particularly applicable to blind and visually impaired people because of the various obstacles they must overcome before their information need is addressed, e.g. information that is not available in digital, audio or braille (Boman 2006:25-35).

Kuhlthau (2008:68) describes uncertainty as a cognitive state that commonly causes affective symptoms of anxiety and lack of confidence. Uncertainty and anxiety can be expected in the early stages of the ISP. The affective symptoms of uncertainty, confusion and frustration are associated with vague, unclear thoughts about a topic or question. As knowledge about a topic increases, thoughts become more focused, and a parallel shift occurs in feelings of increased confidence. Uncertainty is the starting point of Information-seeking which is characterised by lack of understanding, a gap in meaning, or a limited construct about the

information problem. In the Information-seeking context of blind and visually impaired people, the concept of uncertainty and anxiety should be broadened. Research into the Information-seeking needs, behaviour and processes of blind and visually impaired students highlights a constant theme of the barriers they encounter in their attempts to access information needed for their studies (Šehić & Tanacković, 2014; Saumure. & Given, 2004; Seyama, 2014). Also see Chapter 2, Section 2.7. Five general barriers identified in each of these articles creating additional anxiety and uncertainty include:

- i. inaccessible technologies;
- ii. insufficient personal support from fellow students and lecturers;
- iii. inaccessible information content;
- iv. the insufficient time provided to find and engage with the information content and
- v. financial limitations to address the challenges are some of the barriers.

Advances in information technology that open access to a vast assortment of information sources may heighten the sense of confusion and uncertainty. These feelings are present because in the early stages of the ISP the information seeker is often overwhelmed by the idea of “everything” all at once or limiting access to a few most used sources (Kuhlthau, 2008:68). This choice resonates with the situation of many blind and visually impaired people who do not have adequate or equal access to as many information sources as sighted people. This challenge is further compounded by the fact that the information technology may not be accessible, e.g. lacking text to speech software (Seyama, 2014:10). Besides, the information source located through an IT system may be inaccessible, e.g. scanned PDF file formats or websites not conforming to web standards as developed by the World Wide Web Consortium or W3C (World Wide Web Consortium, 2017). For blind and visually impaired people, only one source may be enough to address the information need, but this hinges on the freedom of choice and option – blind and visually impaired people do not have the same range of choices as sighted people. Also, blind and visually impaired people may feel uncertain whether the only books they can access are the most suitable sources. Sighted people have more significant opportunities to verify the relevance of the selected source. There is no comparison of sources if there is only one accessible source available to the blind and visually impaired person. Brophy and Craven (2007:950) indicate that research studies have shown that though a digital resource may be hypothetically accessible, navigational difficulties may

persist for blind and visually impaired users, thus making the distinction between accessibility and usability an ongoing issue.

Kuhlthau (2008:71) also describes the concept of intervention. The central idea is that increased uncertainty indicates a need for assistance and accommodation. Intervention is that activity that will assist the information user with advice and support and thus help him/her to know what cannot be done alone or what can be done only with difficulty. Intervention enables individuals to progress in the accomplishment of their task. Intervention outside the context of the ISP process is inefficient and unnecessary and is experienced by users as intrusive on the one hand or overwhelming on the other. Blind and visually impaired people will undoubtedly need this intervention to assist them thus saving them from insecurity, anxiety, time, and helping them to formulate their information need and find the information required to complete the task at hand.

Kuhlthau (1991) agrees with Dervin (1983) that Information-seeking is a process of sense-making in which a person forms a personal point of view. She proposes a move away from the “system perspective”, i.e. where information is collected, classified, and search strategies that match these descriptions. Kuhlthau submits instead that Information-seeking should be approached from the “user perspective”, i.e. focusing on the user's constructive activity to find meaning from information to extend his or her state of knowledge (Kuhlthau 1991:361). This last point resonates with the statement by Wilson (2006:667) mentioned earlier about the importance of understanding information users in their context and applying it to design and deliver responsive and innovative information services.

In Table 3.3, the six stages of Kuhlthau's ISP model (1991: 366-368) are broadly interpreted in terms of their impact on the blind and visually impaired information seeker. The interpretation is based on a synthesis of implications drawn from relevant studies used in this thesis. See Chapter 2, Section 2.7. The research of Moore, 2000; Seyama, 2014 and Boman, 2006 is referenced in the table.

Table 3.3: Kuhlthau’s ISP model and implication for blind and visually impaired people (1991)

Stage	Task	Thoughts/Feelings	Action	Implication for a blind & visually impaired person
Initiation	Recognise the need for information.	Contemplating the problem, comprehending the task, and relating the problem to prior experience and knowledge. Feelings of uncertainty and apprehension are common.	Discussing possible topics and approaches.	All levels are applicable. The blind and visually impaired person's prior experience and knowledge may be infused with insecurity because of failed or less successful Information-seeking experiences. The person may not know where to find the information, whom to approach or whether it is available in an accessible format and how to access the information (Seyama, 2014).
Selection	Identify and select the general topic to be investigated or the approach to be followed.	Uncertainty changes to optimism after the selection has been made. Ready to begin the search.	Confer with others, make a preliminary search of information, skim for an overview of alternative topics.	Preliminary searching for blind and visually impaired people is limited due to accessibility challenges. Confering with others to find information may be preferable and

Stage	Task	Thoughts/Feelings	Action	Implication for a blind & visually impaired person
				is part of their preliminary search strategy (Boman, 2006; Seyama, 2014)
Exploration	Investigate information on the general topic to extend personal understanding	Centres on becoming oriented and sufficiently informed about the topic to form a personal view.	Information is located about the topic; reading to become informed and relating new information to what is known.	The task may take longer to complete. It may also be challenging to find relevant information because it may not be available or accessible. Anxiety may increase due to the time and effort to find suitable information. Once information is located, the action described in the previous column will be the same for a blind person (Moore, 2008).
Formulation	Formulate a focus based on the information located.	Feelings of confidence increase that come through having more clarity of the problem.	Identify and select ideas from the information to form a perspective.	This stage applies to a blind and visually impaired person. It may take a blind and visually impaired person longer to identify and select information due to accessibility

Stage	Task	Thoughts/Feelings	Action	Implication for a blind & visually impaired person
				challenges. Once enough and relevant information is located, the blind and the visually impaired person will be able to determine the focus of the need and feelings of confidence will increase (Seyama, 2014)
Collection	Gather information related to the focused topic.	Thoughts of the person centres on defining, extending, and supporting the focus of the topic.	Select information relevant to the topic and make notes about the information focus.	Gathering of information is applicable. The mode of note-taking will be different and slower due to the dependence on technologies or braille writing. Scanning the source will also be slower (Moore, 2008; Boman, 2006; Seyama, 2014)
Presentation	Complete the search and prepare to present or use the findings.	Thoughts concentrate on finalising the search with a personalised synthesis of the topic.	Summary of the search. Decreasing relevance and increasing redundancy are noted.	A blind and visually impaired person will conclude the research. The personalised synthesis will be unique to the

Stage	Task	Thoughts/Feelings	Action	Implication for a blind & visually impaired person
				world/life experience of the blind and visually impaired person. The scope of relevance and redundancy will be determined by the number of resources consulted and the accessibility and applicability of the information (Seyama, 2014; Moore, 2008).

Table 3.3 confirms that although the six Information-seeking stages identified by Kuhlthau (1991) applies to blind and visually impaired people, they must be interpreted from the perspective of a blind and visually impaired Information-seeking experience. The Information-seeking process for blind and visually impaired people is slower due to the challenges they have to overcome, such as inaccessible technologies and information resources. During the empirical component of this study, the nature of the impact of each of the six information stages will be tested. Annexure 5 provides the linkage between each with the relevant question in the research instrument. In Chapter 6, Section 6.3, the impact of each of the six Information-seeking stages is explored. This exploration will demonstrate and motivate the elements of the Inclusive Information-Seeking Model.

Wilson (1999:256) compared the Information-seeking Models of Kuhlthau (1991) and Ellis (1989 & 1989(a)). According to Wilson (1999:256), the significant difference appears to be that Kuhlthau suggests stages based on her analysis of behaviour, while Ellis suggests that the sequence of behavioural characteristics may vary.

Kuhlthau (1991:361) describes the Information-seeking process as "the user's constructive activity of finding meaning from information to extend his or her state of knowledge on a particular problem or topic". Two aspects should be clarified from the perspective of blind and visually impaired people, i.e. "the user's constructive activity" and "finding meaning". There is a strong possibility that the concept "the user's constructive activity" may be expressed differently by blind and visually impaired people. The constructive activity for the blind and visually impaired person is highly dependent on enabling conditions, e.g. the available tools to assist the user in locating and finding the information and the format of the actual resources available to name a few. According to the World Blind Union, less than 5% of material published each year is made available in accessible formats for blind and visually impaired people (World Intellectual Property Organisation, 2013(a)). When assessing Information-seeking/behaviour models, this will be one factor to consider because of its impact on choice.

Additional factors that may influence a blind and visually impaired person's "constructive activity" as referred to above are extracted from two studies. The Royal National Institute of Blind People (RNIB) commissioned Surrey Social and Market Research (2009) at the University of Surrey to research the information needs and expectations of blind and visually impaired people. The research was done to assist the RNIB to plan services in response to these needs and expectations. The scope of the study is, unfortunately, not mentioned in the source document. The second source referenced is the Network 1000 study conducted by the Visual Impairment Centre for Teaching and Research at the University of Birmingham (Douglas, Corcoran, and Pavey, 2006). The Network 1000 study aimed to identify the issues blind and visually impaired people experience on various levels, including access to information. Nine hundred and sixty registered blind and visually impaired people participated in this study. The factors that may affect the "constructive activity" of a blind or visually impaired person are:

- i. access to technologies and assistive devices;
- ii. level of training received;
- iii. skills level to use various technologies;
- iv. formats available;
- v. format preference;
- vi. level of mobility;

- vii. confidence;
- viii. ability to act independently;
- ix. applicability of information found;
- x. adequacy of information found;
- xi. general or specific support required to obtain information;
- xii. interpret and apply information (Surrey Social and Market Research, 2009; Douglas, Corcoran, and Pavey, 2009).

Finally, Kuhlthau's model (1991:361) refers to "finding meaning from information". If information resources are not available in any accessible medium, then one can assume that the constructive activity of finding the meaning of information will be challenging or just impossible for the blind or visually impaired person. It is accepted that information is not only contained in books or other printed resources but that it may be sourced from a range of formal and informal sources, documented and otherwise. McKenzie describes the unplanned acquisition of information as "non-directed monitoring". This activity involves the serendipitously encountering and recognising a source in an unlikely place while not seeking for information, or while monitoring information sources (such as reading the newspaper) with no intention other than to become generally informed (McKenzie, 2003:27). In these instances, the experience of extracting meaning from information may be similar for the sighted and the blind and visually impaired person considering the background of the person in terms of educational level, language proficiency and general knowledge. These factors are considered in the IISM (Chapter 6).

3.5.1 Outcomes of the ISP Model

Kuhlthau's ISP model provides several outcomes which also serve as a broad summary of the model.

3.5.1.1 Uncertainty and Anxiety:

The central premise of information behaviour research is that the uncertainty which initiates the ISP causes confusion and doubt and is likely to be accompanied by feelings of anxiety. These feelings are a function of constructing meaning and are natural in the ISP. Users' anxiety

in Information-seeking situations is acknowledged by other researchers (Mellon, 1986; Kwon, 2008).

Anxiety, however, has usually been associated with a lack of knowledge of information sources and technologies. While unfamiliarity with sources and technologies may indeed cause anxiety, the very nature of the ISP creates a climate for potential anxiety. User uncertainty may be anticipated by systems and intermediaries to improve information provision in early formative stages (Kuhlthau, 1991:369-370). It was expected that experience of anxiety might be a substantial factor to consider for blind and visually impaired people due to the variety of obstacles they must overcome during the ISP.

The ISP consists of a series of encounters with information within a space of time rather than a single reference point (Kuhlthau, 1991:361). That uncertainty and anxiety are an integral part of the process, particularly in the beginning phases. For the blind and visually impaired person, uncertainty and anxiety are two very vital and real experiences. These and other factors have also been confirmed in a research report by Cox (2008) and research commissioned by the Royal National Institute of Blind People in the United Kingdom to understand the needs of blind and visually impaired people (Surrey Social and Market Research, 2009). These factors surfaced during the empirical research of this study and are addressed in Chapter 5.

3.5.1.2 Formulation of a Focus:

A precise formulation reflecting a personal view of the information encountered is the turning point of the search. At this point, confidence increases, confusion decreases, and interest intensify. The user's ability to specify his or her problem is considerably enhanced after a focus has been formed (Kuhlthau, 1991:370). It may be more difficult for Grade 12 learners to formulate or specify their information problem, especially if they are not sure of their study interest or career interest or the options available to them. This study investigated the extent to which they were able to form their views of the information problems to be addressed.

3.5.1.3 Platform for articulation:

The ISP model offers an articulation of users' "common experiences" which, when shared by the user, the intermediary, and the system, may provide a basis for interaction in the process

of solving the information problem. The series of stages provides ample opportunity to communicate everyday experiences. The empirical research allowed an examination of the extent of the sharing of Information-seeking processes and results by the learners. These activities shaped their search strategies or determined their satisfaction with the results of their information searching.

3.5.1.4 User education:

The Kuhlthau ISP model (1991) has been incorporated into many user education programmes, to enable people to become aware of their evolving process and understanding of feelings which may affect their information use (cf review by Meyer and Fourie, 2017). The level of awareness and confidence to use various technologies during their information search was examined in these programmes.

3.5.1.5 Exploratory approach:

The ISP model makes provision for a user to be more explorative during his/her effort to address an information need; this exploration has been identified as one of the stages in Kuhlthau's model (Kuhlthau, 1991:366). Systems can be made more proficient at accommodating a range of tasks in response to the user's articulation of the problem at all stages in the ISP, such as offering preliminary, exploratory, comprehensive, or summary searches according to the state of the user's question. It is hoped that the findings of this research will assist schools interested in developing training programs and or render support services to raise the confidence of learners to be more explorative during Information-seeking.

Kuhlthau's ISP model (1991:366) unpacks what could be a somewhat amorphous set of activities in a clear, concrete, and systematic manner. This structure enables analyses, comparisons, and verification in general but specifically for this study to assess its applicability to the information searching process used by visually impaired Grade 12 learners.

3.6 Information-seeking Process and Information-seeking Behaviour: a correlation

It is interesting to note that Kuhlthau's (1991) research into the Information-seeking process corresponds closely with the Information-seeking behaviour as outlined by Wilson. This

correlation is presented in Table 3.4 to indicate how interactive and mutually supportive the research of Wilson focussing on information behaviour and Kuhlthau’s research focusing on the Information-seeking process is.

Table 3.4 –Correspondence between Wilson’s (1999) and Kuhlthau’s (1991) research

Wilson’s four information behaviour stages	Kuhlthau’s six Information-seeking process stages
<ul style="list-style-type: none"> • Problem identification (What kind of problem do I have?) 	<ul style="list-style-type: none"> • Initiation • Selection
<ul style="list-style-type: none"> • Problem definition (Exactly what is the nature of my problem?) 	<ul style="list-style-type: none"> • Exploration • Formulation
<ul style="list-style-type: none"> • Problem resolution (How do I find the answer to my problem?) 	<ul style="list-style-type: none"> • Exploration • Collection
<ul style="list-style-type: none"> • Solution statement (The answer to the problem or how to deal with the problem.) 	<ul style="list-style-type: none"> • Presentation

These stages should not be seen as steps in a single Information-seeking activity, but as reiterated actions that may occur in exploratory loops between each link in the problem resolution chain. These “exploratory loops” are illustrated in the findings of Spink and Cole (2006:31) which show that the Information-seeking process changes as the process unfolds. People’s definition of the problem changes during the Information-seeking process. What they are looking for also changes as well as their willingness to accept the solution to their problem. When people begin to engage with information, they gain new insights which lead to a readjustment for what they are seeking. In all the various stages of the Information-seeking process, the person will go back to a previous step or reformulate, define and analyse and then continue from a different departure point with the Information-seeking process. Wilson calls this “feedback loops” (Wilson, 1999:267). The notion of the feedback loop was proposed before Wilson’s article in the research by Leckie, Sylvain and Pettigrew (1996) and Spink (1997). Spink (1997) discusses evidence of feedback loops in both Information-seeking behaviour and information retrieval models. It could be argued that the process of “sense-making” and “sense-unmaking” as proposed by Dervin’s (1983) sense-making theory represents a feedback loop in the sense-making process.

Wilson’s 1996 revised model of information behaviour recognises that there are four types of Information-seeking behaviours:

- i. passive attention (no Information-seeking is intended, but the information is acquired through listening to the radio or watching television);
 - ii. passive search (information that is relevant to an individual is acquired as a result of one type of search);
 - iii. active search (the individual actively seeks information required) and
 - iv. ongoing search (this behaviour builds on an active search to update and expand the person's knowledge framework. It is more contextual information than specific).
- (Wilson, 1999:256-257; Wilson and Walsh (1996).

The four types of Information-seeking behaviours identified by Wilson (1999) are confirmed and elaborated on by Bates (2002:4). For a more comprehensive understanding of the four Information-seeking behaviours, the research of Bates is presented below with annotations of how it affects blind and visually impaired people. Bates (2002:4) elaborates on Wilson’s (1999:256-257) four types of Information-seeking by proposing four modes of Information-seeking as presented in Table 3.5.

Table 3.5: Modes of Information-seeking

Mode	Active	Passive
Directed	1) Searching	2) Monitoring
Undirected	3) Browsing	4) Being aware

“Directed” refers to whether an individual seeks information that can be specified to a certain degree, and “Undirected” refers to a situation where individuals are randomly exposed to information. “Active” and “Passive” refer respectively, to whether the individual does anything actively to acquire information, or is passively available to absorb information, without seeking it out.

The rationale of the modes of Information-seeking presented in Table 3.5 is summarised below with an indication of how this may impact on blind and visually impaired people:

Passive undirected mode – Being aware. A substantial amount of our knowledge and what we learn is based on passive undirected behaviour, i.e. merely being aware of what is going on around us. The five senses all play an essential part here. If a person's sight is limited, for example, it is highly likely that learning by such a person in terms of engagement with the study material will be different from that of a person with sight. If a person is not able to see certain things around himself/herself, he or she will take longer to learn or in some cases not learn at all. Saumure (2004:30) researched visually impaired students' perception of their information behaviours and how they perceive their success at finding academic information. The research also considered the factors that impede or enhance this success. Saumure's research confirms that "gaining access to textbooks is not as straightforward for visually impaired students as it may be for sighted students" because visually impaired require textbooks in an alternate format. In other words, sighted students can obtain their material at the bookstore, purchase what they need and start their studies immediately. This activity is not the same for blind and visually impaired students. After purchasing printed study material, these students have to find someone or a service to adapt the printed text into audio, electronic or braille format. They must then wait for the conversion to be done, possibly pay for the conversion of the text and only then be able to engage with the study material.

Passive directed mode – Monitoring. When a person is in a monitoring mode, he/she may have a question in mind or maybe wondering about something without necessarily actively searching for solutions. As noted in Ellis's (1993) model of Information-seeking behaviour, monitoring is the act of maintaining awareness of developments in the field of interest. Monitoring can be a way of life, as depicted in Savolainen's (1995:272) Everyday Life Information-seeking Model. There is alertness in the person that when the answer presents itself randomly and unexpectedly, i.e. either in the environment or in a book or on the radio, it will be picked up and applied in the context of the information need. For blind and visually impaired people, these cues are less obvious, and they may, therefore, miss them. Moore (2000:37) notes that sighted people absorb over three-quarters of the information they receive by sight. Sight as a medium to acquire information is severely reduced for blind and

visually impaired people compared to people with sight and therefore puts blind and visually impaired people in a disadvantaged position in the Information-seeking process.

Research by Bates (2002:5) on Information-seeking in context shows that, intentionally or unintentionally, people often arrange their physical and social environment in such a way as to provide the information they need when it is needed. The research by Sloan and McPhee (2013) confirms this. They highlight the following three information sources:

- i. people (the people one knows and is familiar with);
- ii. place (the library) and
- iii. information tools.

Sloan and McPhee (2013) found that students tend first to use what is known to them during Information-seeking. People create a particular structure to assist them in their Information-seeking behaviour. Examples of this are how people organise their kitchen cupboards or their office. This organisation makes it less necessary to apply active Information-seeking. This activity is one of the reasons why it is essential for blind and visually impaired people to have the physical environment where they work and live organised and structured. A structured environment will ensure that they can move around confidently to find what they are looking for without a challenge. This activity is an example of passive Information-seeking. The statement about the structured environment of blind and visually impaired links with the observation by Raz et al. (2007:1129). They have determined that blind and visually impaired people code spatial information in “route-like sequential representations”. The order in which blind and visually impaired people encounter items may, therefore, be vital for them to generate a mental picture of the world.

Active undirected mode - Browsing. Browsing is the complementary opposite of monitoring. When people browse, they have no particular information needs or interest, but actively expose themselves to new information. When monitoring, a person maintains a “back-of-the-mind alertness” (Bates, 2002:5) for the things of interest but there is not a pressing need to engage in an active effort to gather the information they may be seeking. Monitoring and directed searching are ways in which we find information that we know we need to know. Browsing and being aware are ways in which we find information that we do not know we

need to know, hence the statement by Bates (2002:5) that “monitoring and browsing are complementary to each other, opposites in a way”.

Active directed mode - Searching. In this mode, a person actively attempts to answer questions or develop an understanding of a question or topic area. According to Bates (2002:7), people tend to rely more on passive modes of finding information than active searching itself. One of the reasons proposed by Bates is that people use the principle of least effort in their Information-seeking. They will even accept information they know is of lower quality (less reliable), if it is more readily available or more comfortable to use. This response is called “satisficing”, a term coined by Simon and explained by him as a decision-making strategy where a person will attempt to meet the minimum criteria for adequacy but not necessarily maximise the value (Hadar, 2011). Depending on the information need, it is often just more comfortable to ask a colleague or friend whom we trust for information than to go to a library or search the Internet for a piece of information.

Over the past 200 years, the amount of recorded information has grown to such an extent that we need a variety of access tools to assist us in finding the information (Kadiri & Adetoro, 2012:22). Because people are usually accustomed to passive ways of finding new information, they now must acquire skills and knowledge to enable them to search for the information. Sometimes this activity may not even yield any results (Bates, 2002:6-7). This mode applies to blind and visually impaired people as well. For example, using a braille book is more cumbersome than a printed publication because it is a taxing physical activity for the fingertips to move across the pages, content pages or index to locate and read the information required. On the Internet, using a screen reader also requires navigational, operational and auditory skills. The level of confidence to use these tools will determine how easily a person engages with and finds information on the Internet or electronic information in general. Research by Sahib, Tombros and Stockman (2012:387) referred to in Chapter 2, Section 2.4 confirms the challenges experienced by visually impaired people relying on speech-based screen readers to find electronic information. Their research indicates that it took a visually impaired person two to three times longer to explore their results than a person with sight. Also see additional research mentioned in Chapter 2, Section 2.7.

Bates (2002:9) makes the point that it is human nature to rely on passive absorption or sampling and to select to find information. With the proliferation of print and especially electronic information over the years, various structures and systems have been developed to create access to information. These encompass classification systems, specific catalogues, subject headings, thesaurus terms, online databases and the World Wide Web. To use these systems effectively, a person must master substantive knowledge about the methods of access, as well as technical searching skills (Bates, 2002:9). To avoid these challenges is one of the reasons why it is typical human behaviour to revert on passive undirected mode. In this mode, Information-seeking is done in a somewhat unconscious or automatic way and is carried out in a natural and unselfconscious way. If this argument by Bates is valid for sighted people, then it should be even more so for blind and visually impaired people who are accustomed to finding information in their informal way. This is in line with Seyama's proposal (2014) that to provide an efficient service to people with disabilities they should be consulted when designing "appropriate information systems." Blind and visually impaired people are less accustomed to using access systems referred to above because of social, technological or accessibility reasons (Williamson and Schauder, 2000). This reality implies that the Information-seeking behaviour of blind and visually impaired people is likely to be, to some extent, different from that of sighted people who can use various access systems.

Differences in cognitive styles and intellectual development in individuals, communities and disciplines have been confirmed by decades of study (Bates, 2002:11). These studies confirm the point that it is likely that blind and visually impaired people generally will have a different understanding and approach to that of sighted people. One can take this argument further to say that this difference will exist within a group of blind and visually impaired people depending on the level of training, exposure, duration of being blind or visually impaired and many other factors.

Another important point made by Bates (2002:3-4) is that humans learn much from their family or clan, which offer emotionally intense relationships than from the formal systems. One of the reasons for this is that our survival and understanding of the world around us is dependent on the assistance we receive from this family learning. Much learning and experience are gained from the daily social interaction with family members (Boman, 2006:40 & 77). It is essential to take notice of this "family or clan" learning for this study. The research

of Williamson (1998:30-31) confirms that family and friends were the most frequently used sources of information. The main reason cited for this was that family is trustworthy and that they trusted the people they know. The reference to the importance of taking account of “emotionally intense relationships” referred to earlier is supported by the research of Dörk, Carpendale and Williamson (2011:2). They concluded that Information-seeking "is an inherently complex human experience that includes a wide range of emotions and motivations beyond a particular problem or needs."

3.7 The Theoretical Framework

The Information-seeking behaviour research of Moore (2000), Wilson (1999) and Kuhlthau (1991) was presented above as the three building blocks making up the theoretical framework of this study. The starting point for any Information-seeking behaviour is the existence of an information need. The discussion of Moore’s research clarified the scope of these needs for blind and visually impaired people. Moore (2000:10) proposes two frameworks to explain what initiates an information need, i.e. certain events in a person's life and or Maslow's motivational theory. Maslow's theory is based on the understanding that human behaviour is controlled through several needs and "through these various needs, the individual is motivated" (Sengupta 2011:103). An information need will “motivate” a person to act in one way or the other, to address the need. Kuhlthau’s (1991) Information-seeking process is one such activity a person uses to address the information need. This process, on its own or incorporating other Information-seeking means becomes a person's Information-seeking behaviour (Wilson 1999:249). The Oxford Living Dictionary (2016) defines “behaviour” as to how "an animal or person behaves in response to a particular situation". Information-seeking behaviour is evident when there is a “particular situation” (Wilson, 1999) which is translated as an information need (Moore, 2000) and the way the need is addressed is based on following certain Information-seeking processes (Kuhlthau, 1991).

The three Information-seeking components (need, behaviour and process) do not follow one another sequentially. One component is also not more important than the other. It is proposed that these three components influence one another because they are interactive and interrelated and as such form the basis for an integrated theoretical framework for Information-seeking behaviour. Figure 3.2 shows a framework of the integrated and

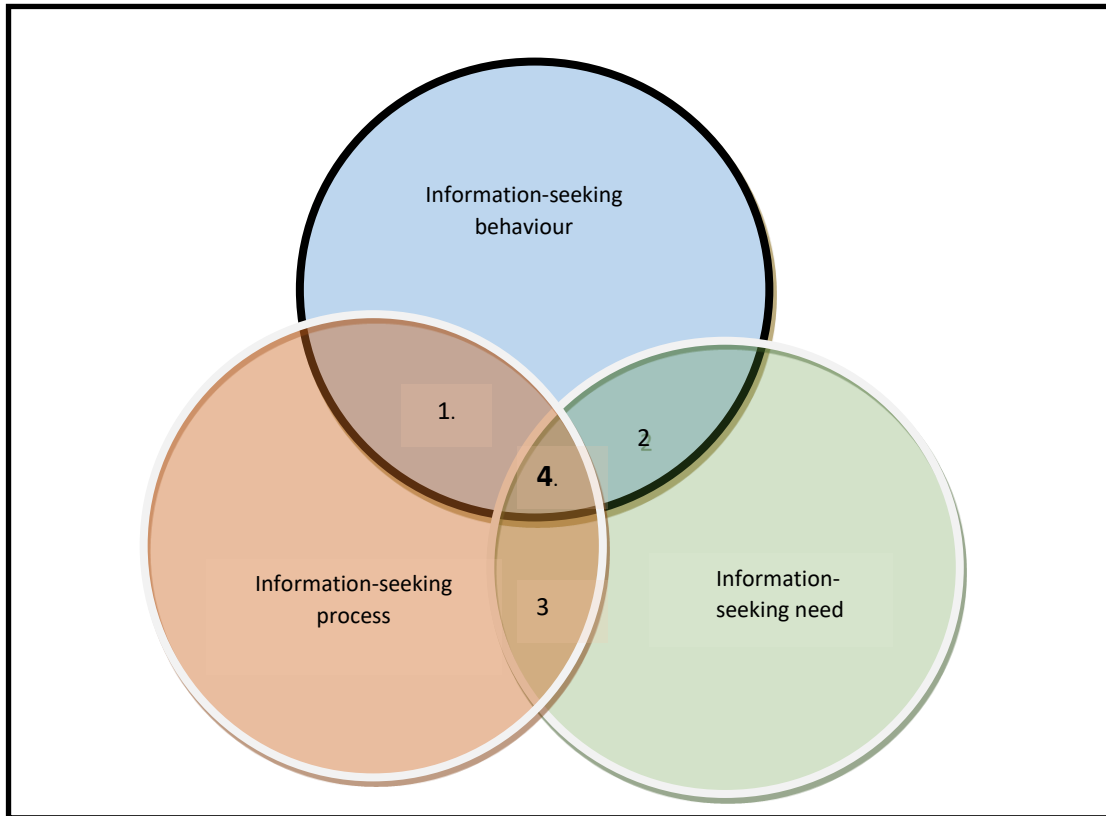
interrelatedness of the research by Moore, 2000; Wilson, 1999 and Kuhlthau, 1991). The framework is not static but dynamic, especially where the three-Information-seeking behaviour models' interface with each other. There is a continuous dynamic between the work of the three researchers based on the Information-seeking situation of a person, the environment in which he/she operates and the person's actions to address the information need. The dynamic between the three information behaviour models will, therefore, be different for different people based on their personal and environmental circumstances.

The research of Moore (2000), Wilson (1999) and Kuhlthau (1991) as depicted in Figure 3.2 shows the three unique interactive intersections between the three research models, viz. Interface one, two and three. Figure 3.2 also indicates one all-inclusive interface, i.e. Intersection 4, where all three models intersect. The following explanation is provided to assist with the interpretation of Figure 3.2. In the first scenario, the Information-seeking behaviour of a person will be influenced by the Information-seeking need (Intersection 2). This need will result in a specific Information-seeking behaviour unique to each person which will be affected by the Information-seeking process leading to interactive Information-seeking dynamic (Intersection 4). In another scenario, the Information-seeking need will be addressed following an Information-seeking process (Intersection 3). The process will be influenced by the Information-seeking behaviour leading to an interactive Information-seeking dynamic (Intersection 4). In a third scenario, the Information-seeking process will be influenced by the Information-seeking behaviour (Intersection 1), or vice versa to address an Information-seeking need leading to interactive Information-seeking dynamic (Intersection 4). It is important to note that the various intersections are not mutually exclusive. There is also no sequence in this framework, as it is highly dynamic and interactive.

Figure 3.2 conveys the point that a person may have an information need which will result in following a specific Information-seeking process (Intersection 3). The particular Information-seeking process followed by the person will define his/her Information-seeking behaviour (Intersection 1). A person may display specific information behaviour based on his/her information need (Intersection 2). Intersection 4 characterises a person's holistic Information-seeking interaction, i.e. "the person in context" as identified in Wilson's (1991) model of information behaviour. It is important to note that the type of activity taking place in the various intersections may be different for different people and it may even be different for

the same person depending on his/her circumstances, and the information needs to be addressed.

Figure 3.2: Information-seeking – an integrated theoretical framework



Moore’s information needs research does not account for all the “intervening variables” in Wilson’s model which appear to be important in determining information behaviour among people with a visual impairment (Moore, 2000; Wilson, 1999). Beverley, Bath and Barber’s (2007) research demonstrates how Wilson's model of information behaviour (Wilson, 1999), developed with more general information situations in mind, can be applied, although modified slightly in terms of the individual's health characteristics, to a specific group of people. This modification indicates that Wilson's (1999) model can make a valuable contribution to our understanding of information needs in the context of other groups and conditions such as the Grade 12 learners, the focus of this study.

Moore’s (2000) research focused predominantly on information needs and did not formally consider the broader aspects of information behaviour, such as “intervening variables” which have been identified by Wilson (1999). Hence it is argued that the work of each the three

researchers complements the others. Although Kuhlthau’s (1991, 2008) Information-seeking process model – as discussed in Section 3.5 of this Chapter - was not developed with blind and visually impaired people in mind, it appears from the preliminary assessment that the six stages of her model may apply to blind and visually impaired people. The outcome of the six stages might have to be differently interpreted because of the different information environment to which blind, and visually impaired people are exposed.

The overview of the main characteristics of the research by Moore (2000), Wilson (1999) and Kuhlthau (1991, 2008) showed certain similarities presented in the different stages or steps described by the researchers to explain their work. For a comparison of the similarities between the various stages/steps proposed by the three researchers, the stages/steps are placed in juxtaposition in Table 3.6 to provide a macro overview.

Table 3.6 Information-seeking Behaviour research: a macro overview

Moore (2000) (Information-seeking needs)	Wilson (1999) (Information-seeking behaviour)	Kuhlthau (1999, 2008) (Information-seeking process)
1. Function (why do people need information?)	1. Context of information need.	1. Initiation.
2. Form (what kind of information do people need?)	2. Activating mechanisms (stress/coping mechanism).	2. Selection.
3. Clusters (what do people need information about?)	3. Intervening variables.	3. Exploration.
4. Agents (who initiates the information?)	4. Activation mechanism (risk/reward theory and social learning theory).	4. Formulation.
5. Users (how do needs differ between groups?)	5. Information-seeking behaviour.	5. Collection.
6. Extracting (which mechanisms can be used to meet information needs?)	6. Information processing and use.	6. Presentation.

The three researchers use their terminology to describe the respective stages/steps, and there is a similarity in terms of the rationale or action implied. For instance, if one considers

the first step and uses the description by the researchers of Function (Moore, 2000), Context of information need (Wilson, 1999) and Initiation (Kuhlthau, 1991) the following links are evident:

Moore (2000:6-7) explains “function” as the need of people for social information to support them in the two roles they play in society, i.e. as citizens and consumers. A citizen needs a considerable amount of information to exercise his/her democratic right. As consumers, people also need access to a wide range of information to assist them in making choices that will affect their daily lives. In other words, the environment a person lives in is a significant determinant of the type of information need he/she may have at any given time. The context of any of the physiological, cognitive or affective needs – as indicated in Section 3.4 of this Chapter - may be the person him/herself. A person's role in work or the environment in which he/she operates is all factors that influence the type of information need a person may have. The person in context remains the focus of the information need. Kuhlthau (1991:366) explains “initiation” as that moment a person first becomes aware that he/she lacks knowledge or understanding of something. He/she recognises the need for information. In this phase, a person contemplates the problem, comprehends the task, and relates the problem to prior experience and knowledge. It is self-evident that experience and knowledge will be influenced by the context of the person's life as explained by Wilson (1999) and the role the person plays in society as described by Moore (2000).

If the remainder of the six stages is analysed in the same manner as the first stage, then one can summarise the six Information-seeking stages as follows:

- i. Personal Context
- ii. Information-seeking purpose
- iii. Personalised Information-seeking behaviour
- iv. Information source selection / approach
- v. Evaluating the results of the Information-seeking process and
- vi. Information-seeking methodology and application of information.

The research of Moore (2000), Wilson (1999) and Kuhlthau (1991) underpins the methodology of the empirical study and is used for the analysis of its findings and thus serves

as the basis for an Inclusive Information-Seeking Model (IISM) which is contextualised and discussed in Chapter 6.

3.8 Summary

The Information-seeking Behaviour Models of Wilson (1999) and Kuhlthau (1991) and the Information Needs Model of Moore (2000) have been assessed to determine whether they could serve as the theoretical framework of this study. It was determined that although different researchers developed each model and that each model has its unique features, the various stages identified for each model are, in fact, inter-related. This integration provides a sound platform for the theoretical framework of this study. It also creates a strong point of departure to motivate for an integrated and IISM at the end of the study, viz Chapter 6.

Chapter 4: Research design and methods

4.1 Introduction and purpose

The purpose of Chapter 4 is to do the following:

- i. Describe in Section 4.2 the empirical research objectives, the sample and the research instrument, the interview schedule and the mapping of the questions to the models of Kuhlthau (1991), Wilson (1999) and Moore (2000) which informed the study;
- ii. Explore in Section 4.3 the measures set out in the relevant literature to be taken when researching with respondents living with a disability, showing how they were considered in the study;
- iii. Discuss in Section 4.4. the general principles underlying the research approach used in this study;
- iv. Document in Section 4.5 the preparations for the study and how the study was conducted, including a description of the pilot study.
- v. Provide an overview of the research conduct and structure followed in Section 4.6 and conclude with a description of the tools used during data analysis in Section 4.7.

4.2 Empirical research objectives and framework of the research instrument

Two objectives were formulated for the empirical research of this study. The first objective was to assess to what extent the findings of the empirical component of this study correlate or contrast with the information-seeking behaviour research by Moore (2000), Wilson (1999) and Kuhlthau (1991) as discussed in Chapter 3. The second objective was to identify elements (general and unique) that describe and explain the information-seeking behaviour of blind and visually impaired Grade 12 learners in order to develop an Inclusive Information-Seeking Model. The intention was to collect reliable, verifiable, and objective data through interviews with the sample of blind and visually impaired Grade 12 learners. The interviews were guided by an interview schedule which is discussed in detail in Section 4.5.4. The framework of the research instrument was structured around the following broad questions to address these empirical research objectives:

- i. What search strategies are followed/applied by blind and visually impaired Grade 12 learners when seeking career or study information?
- ii. What manual and or electronic means/tools do they use to locate the information or information sources?
- iii. What information sources do they use when seeking this information?
- iv. How do they interact with these information sources to find the information for which they are looking?
- v. Could they obtain the information for which they were looking?
 - a. If no or very little information was obtained, what was the reason?
 - b. If information was obtained, did it address their information need?

The responses to the interview questions were consolidated and analysed in Chapter 5. The consolidation and analysis were done in order to assess the extent to which the information-seeking behaviour of the participants corresponds with the information-seeking behaviour research of Moore (2000), Wilson (1999) and Kuhlthau (1991), as presented in the theoretical framework (cf. Chapter 3, Section 3.7). The method of data analysis and presentation of results are also discussed in this chapter.

4.3 Doing Research with People Living with a Disability

Data collection and analysis are critical components of empirical research and forming the basis of the research design. There are, however, other methodological aspects over and above good practice in social science research. Additional aspects were also considered during the empirical research and are discussed in the following sections. These aspects were considered to assess their possible impact on the research process and the findings. These considerations arise from the particular circumstances surrounding research with blind and visually impaired respondents, as identified in the relevant literature.

4.3.1 Interacting with Blind and Visually Impaired Participants

Beverley, Bath and Barber (2007) noted the concern of blind and visually impaired participants in their research about how information of their medical condition had been conveyed to them. Some participants described that they felt that they had been spoken to inappropriately during their consultations with the ophthalmologist. A few participants felt

that the hospital staff had mistreated them. These responses for this study imply that the researcher should take care of how the face-to-face meetings are arranged, conducted and to ensure that the participants understand that the complete process is confidential. Thus, the capabilities of the learners were not underestimated. No assumptions were made, and the researcher kept the interview informal and relaxed, ensuring that the participants understood their right to ask for clarification at any stage. The application of ethical research practices was adhered to, as discussed in Section 4.3.4 below.

4.3.2 Participants' Ability to Express Themselves

Beverley, Bath and Barber (2007:25) found in their research with blind and visually impaired adults, that participants could not clearly articulate their information needs. Participants could refer to the difficulties or problems they experienced in various aspects of their daily life, (e.g. taking tablets, cooking, eating out, and filling out forms to name a few examples). The researchers inferred the information needs from these examples. It was, therefore anticipated that the learners in this study might find it difficult to express themselves clearly. This anticipation was based on variables such as lack of English language skills, their lack of exposure to certain information-seeking situations, their unfamiliarity with the researcher or the interview situation to name a few. Care was taken to allow opportunities for an explanation when it was apparent that they struggled to express themselves, with notes being made of instances where accuracy might have been affected.

4.3.3 Participants' Understanding of the Terminology

To mitigate the risk of understanding it was essential to ensure all participants could understand the purpose of the study, the terminologies used during the interviews, and what was expected of them. The researcher identified all potentially challenging or confusing terminologies before the interviews and was assisted with this by two blind colleagues. Also, a pilot study was conducted at one school for the blind to test understanding of the questions. A key terminology list was compiled before the interview, based on the questionnaire. These terms were explained to learners before the actual interviews took place.

4.3.4 Conducting Research with People with Disabilities: Ethical Considerations

People who feel vulnerable, such as people with disabilities, and who participate in a research project require sensitivity and a professional approach to ethics and confidentiality (Cox, 2008:16). The National Disability Authority (NDA) in Ireland, an independent state body, is providing advice on disability policy and practice to the government and public sector, published ethical guidelines for disability research (National Disability Authority 2008:1-12). The Guidelines are based on international best practice and in consultation with people of disabilities. Ethical behaviour in the disability research area is not regarded as a separate set of ethical behaviours; it is acknowledged that it is located within the broader research ethics framework and that the principles of respect for the human rights are the cornerstone of any research. The focus is also away from researching people with disabilities toward researching with them (National Disability Authority, 2009:7).

The NDA provides the following core values for research:

- i. Respect for the human rights, dignity, equality and diversity of all those involved in the research process.
- ii. Advancement of social justice for people with disabilities into the broader community.
- iii. Promotion of the well-being of those participating, involved in or affected by the research process.
- iv. Avoidance of harm to those involved in the research process or the wider community.
- v. Facilitation of the participation of people with disabilities in research and research dissemination, including those for whom obstacles might make such participation difficult without additional support.
- vi. Maintenance of the highest professional, legal and ethical standards and competencies.
- vii. Comprehension and fulfilment of relevant legal responsibilities (National Disability Authority 2008:2-3).

The values underpinning the research guidelines are set out in the following five sub-sections followed in each instance by a note about their application in this study:

- i. Well-being and avoidance of harm
 - a. The well-being of those involved must be at the centre of the research.
 - b. Every effort must be made to anticipate any possible harm which might result for participants or others from the research process, and methods must be developed to minimise these dangers.
 - c. Research must not be used to deny established rights or restrict legitimate entitlements.

All legal responsibilities must be fulfilled (National Disability Authority 2008:2-3).

Implementation in this research:

The well-being of the learners was ensured throughout the preparation of, introduction to and conduct of the interviews. At the start of each interview, a set of ground rules was suggested by the researcher. The learners were informed that it is acceptable to name any organisation which they are describing, whether critically or positively, but that they should not name individuals within those organisations. The interviews were conducted at the respective schools; physical harm was limited because of the learners' familiarity with their surroundings. The findings of the research would cause no harm by protecting the identity of each learner and by avoiding any link to a statement by any individual learner. The learners were informed of their rights during the interview.

- ii. Collaboration with people with disabilities
 - a. Participation in research by the people directly affected, and their organisation must be promoted.

Implementation in this research:

The empirical research instrument was developed in a pilot study with the full participation of a test group of learners from a school for the blind located in the Eastern Cape. The learners and the five schools involved in the research were encouraged to add value and participate

in the research, not only as respondents but also to ensure that all relevant aspects were included in the research, to reflect their experience most realistically and comprehensively.

iii. Consent

Voluntary and informed consent was obtained from all participants. To obtain free and voluntary consent is a method to resolve ethical tension of involving people in research when they have not actively sought it and when the research is often only of indirect benefit to them. Through obtaining consent, individuals are treated as subjects and participants in the research. Proxy consent is required when children participate in research, but it remains vital to obtain Assent from the learners as well (National Disability Authority, 2009:35, 37).

Implementation in this research:

Since the research was conducted with learners who might be younger than 18 years of age, legal consent was sought from the Principals of the Schools involved. The Information Sheet and Assent Form (Annexure 1) were discussed with each Principal of the School who was requested to sign the Assent Form. The same process was repeated with each of the participating Grade 12 learners who were also requested to sign the Learner Assent Form (Annexure 3). The consent acknowledged the learners as essential participants in the research. The Assent Form was read to each learner individually. The consent form sought permission to record the proceedings so that an accurate transcript could be produced. Issues of confidentiality were clarified, and learners were allowed to ask any questions to clarify uncertainty or concerns. It was explained that what they said during the interviews might be repeated verbatim, but that their identity would not be revealed.

The form guaranteed that the researcher would protect their identity and indicated that participation was voluntary and that any learner could withdraw at any stage without needing to give a reason. Learners able to sign the form did so. Those who could not were asked verbally for their consent which was noted. Each learner was asked whether their consent was voluntary or whether it was based on any other factor. Consent was confirmed during the interview. Learners were also reminded about the option to withdraw from the research at any time without needing to give a reason.

iv. Respect

- a. The dignity of participants to be respected throughout the research process.
Anonymity, privacy and confidentiality to be ensured at all stages, including the final stage of data storage/disposal.

Implementation in this research:

The dignity of the learners was protected by giving them the assurance that nothing they said, whether based on fact or assumption, would be used in a manner to expose, discredit or belittle them. All contributions would be taken at face-value and evaluated during the data analysis phase. The dignity of the learners was also respected by not underestimating their age, experience, knowledge or educational status. Their anonymity, privacy and confidentiality were protected as expressed in the Assent Form they signed or agreed to. Also, interviews were conducted individually in order to protect anonymity.

v. Equality and diversity

- a. Equality and diversity among people must be included as research design and planning issues.

Implementation in this research:

It was acknowledged that there would be differences among the learners, notwithstanding the shared experience of being blind or visually impaired. Learners were likely to come from different social, cultural and economic backgrounds, thus creating differences that might have an impact on their responses.

4.3.5 Assent Form Framework

Dalton and McVilly (2004:69-70) propose a Participant Information Sheet and Participant Assent Form to ensure that all information is covered before initiating the research. It should be easily understandable by the participants and in simple English. They recommend that the document should include the following:

- i. The short, plain-language title of the project.

- ii. A brief, plain-language statement of the project aims and potential benefits. The statement should acknowledge that the project is being conducted to meet the requirement of a qualification, e.g. a university degree. Also, any sponsorship of the project by government or non-government organisations should be acknowledged.
- iii. The names and contact details must be provided of those responsible for the project. The names of those with overall administrative responsibility.
- iv. The name(s) and contact details of the authority(s) who had approved the project.
- v. A description of what the participants are expected to do, where they are expected to participate and over what period. This description should include acknowledgement of any audio or video recording that could be used in either research activities or data collection.
- vi. A statement of any potential risks or discomfort for participants or those with whom they live, work or socialise. Information about how any adverse events will be addressed.
- vii. A statement of potential benefits to participants and any possible limitations to these benefits (e.g. for the duration of the project). Compensation for their participation in the research should also be addressed.
- viii. Details of how data is to be collected, stored and later destroyed or preserved. Details of how the privacy and confidentiality/anonymity of participants are to be maintained. Also, any limitations on the maintenance of confidentiality and circumstances where information might need to be disclosed to a third party (e.g. reporting any disclosure of abuse).
- ix. Details of how the findings are to be disseminated. Also, clarify how the confidentiality of individual participants will be maintained. Also, a statement of how participants will be advised or can find out about the findings other than through the peer-reviewed literature. Information about whether and how individuals can gain access to data to assist with their usual support or treatment.
- x. A statement guaranteeing the participants' right to withdraw at any time, without having to give a reason or in any way having an adverse consequence for them personally (e.g. the cancellation or alteration of any support service or treatment they would ordinarily receive).

- xi. A statement that the person has been given a signed copy of the Participant Assent Form.
- xii. Contact details of an independent authority to whom participants can direct any inquiries or concerns that they may have about their involvement in the project. The independent authority should be readily accessible at a local level.
- xiii. A signed statement (by the person or legal guardian) that the participant has read, or had it read to them. It is vital that participants understand their participation in the project and that they agree to participate in the understanding that they can withdraw their consent at any time without prejudice to their usual services and treatment.
- xiv. The Participant Assent Form should also provide for the consent of a “Legal Guardian” or “Person Responsible”, where the person is unable independently to provide informed consent — for example, in the case of a person whose disabilities limit their decision-making capacity, or a minor. The reason why someone other than the participant signs the form should be documented (e.g. some blind and visually impaired people find using a pen or pencil awkward or have not learnt the skill). In such circumstances, the relationship between the participant and the person providing the consent should be detailed. There should be a statement that the person providing the consent on behalf of the participant does so without any inducement or likelihood of personal gain arising from their consent. Also, there should be a statement that even though someone else has signed the Participant Assent Form if the participant does not provide assent to proceed (i.e., they protest or choose not to comply with the procedure), their participation will cease immediately.
- xv. Pages on any Participant Information Sheet or Participation Assent Form should be numbered.

The above framework was used when engaging with the Principal of the Schools as well as with the design of the required documentation. The documentation was used as a discussion document to obtain the approval of the Principal of the School to involve the Grade 12 learners of the school in the research. Individual Assent Forms were ready for learners to sign after the information session explaining the research. The reasons that these guidelines are

more onerous and detailed than general requirements for social science research and exceeded the requirements of the University of Cape Town for ethical clearance are explained above noting the particular guidelines for researching with blind and visually impaired research participants.

4.4 Preparations for the interviews

Before the conduct of the empirical research, various preparations were made, including the testing of the interview instrument. These preparations were done to ensure that the research objectives would be addressed through adhering to research protocols and requirements.

4.4.1 Documentation and logistical arrangements

Before initiating the empirical research at the five selected Schools for the Blind, the following documentation was prepared:

- i. A cover letter introducing the researcher and research was drafted. The letter sought permission from the Principal of the School to conduct interviews at the schools and explained ethical requirements, what would be required from the learners, and how long the interviews would take. (Annexure 2(a))
- ii. The research information sheet was attached to the letter explaining the purpose of the study, the learner's role, the time required for the interviews, background information about the research and its objectives; the location where the interviews would take place, the rights of the learners and ethical matters. (Annexure 1)
- iii. An Assent Form was attached for the Principal of the School to sign, agreeing to allow the Grade 12 learners to participate in the research and various other ethical and administrative matters. (Annexure 2(b))
- iv. A learner Assent Form was prepared to inform them of their role and function and their rights during the interview. (Annexure 3)
- v. The interview instrument was attached to give the Principal of the School, an idea of the nature of the questions. (Annexure 4)

The Principals of the selected Schools – whose selection is described in Section 4.5.2 - in four coastal and one interior Province of South Africa, were contacted by telephone to discuss the

research and to obtain the necessary permission. A telephone meeting was acceptable due to the distances, (one school is in a different Province which is 900 km away, and the other school is 400 km away from where the researcher resides) hence saving cost and time. The Principals of the Schools were immediately agreeable to the request. The five documents listed above were e-mailed to the Principals of the Schools requesting them to confirm in writing what was discussed and for them to sign the Assent Form. The Principals of the Schools suggested dates suitable to the school activities. They provided names of teachers to assist with arrangements at the schools before and during the interviews. They also provided the researcher with the number of Grade 12 learners in their school to allow the researcher to make the necessary number of copies of applicable documents.

4.5 Research Design

The research was conducted within a constructivist paradigm. Constructivism views the world as a constantly changing place where individuals have varying perceptions of a given situation (Dootson, 1995:184). Constructivism is consistent with naturalistic research. It is conducted within a holistic-inductive framework (Patton, 2015) and is, therefore, usually associated with qualitative research. The data collection tools associated with this approach usually include interviews, observations, document reviews and visual data analysis (Mackenzie & Knipe, 2006:193). Wilson (1981, 1994) and Nicholas (2000) have advocated for the use of qualitative research methods to undertake studies of information behaviour. Since the focus of this study is on the information-seeking behaviour of Grade 12 learners, the qualitative research approach was deemed the most suitable because it is concerned with human beings in all their complexities (Myers, 2000). The qualitative approach was selected because the method of data collection was through verbal (interviews with blind and visually impaired Grade 12 learners) and textual data (literature review). The qualitative research approach was aided by a research instrument that consisted of open-ended questions that were used during the interviews to ensure all interviews followed the same pattern and addressed the same questions to ensure consistency. Creswell (2003) lists several characteristics of qualitative research. This research corresponds to all characteristics. They are:

i) the research took place in the natural setting of the sample group, i.e. in the school environment;

- ii) the method of data collection was interactive, i.e. face-to-face interviews were conducted;
- iii) the research was emergent because of the open-ended questions that were asked rather than tightly prefigured questions;
- iv) the research was interpretative because the researcher had to interpret the data following the data collection process which led to the development of themes and patterns emerging from the responses received;
- v) the researcher largely followed an inductive reasoning approach (see Chapter 5, Section 5.2).

Also, Creswell identifies the researchers' role and the role this position plays in the interpretation of data. It is therefore inevitable that biases, values, experience and values of the researcher will be reflected one way or the other in the study. However, an effort was made to substantiate all observations with research found in the literature. Two of the characteristics of qualitative research mentioned by Creswell are, however, less applicable to this study, i.e. the holistic approach and the use of more than one strategy of inquiry (Creswell, 2003). This study cannot be regarded as holistic because it only focused on the information-seeking behaviour of one group of blind and visually impaired people (Grade 12's) in a specific setting (the school) seeking specific information (tertiary study or job-related information). Secondly, this study employed only one method of data collection, although Creswell (2003:183) states that it is enough to use only one strategy for "beginning researchers".

The research design, guided by the Information-seeking Process (ISP) models serving as the theoretical framework, used qualitative data collection methods. Qualitative research attempts to broaden or deepen understanding of how things came to be the way they are (Hancock, Windridge & Ockleford, 2009:4). Empirical research was conducted to obtain data on the information-seeking behaviour of blind and visually impaired Grade 12 learners. The nature of the empirical research required that a specific group be selected as described in Chapter 1, Section 1.6 for an in-depth study, as it was not practicable to survey all blind and visually impaired people. The selection of career information as a type of information need to be addressed, was to give this study a specific focus area in the context of an Information-

seeking Model. This study focused on Grade 12 learners and career information for the following reasons. The National Curriculum Statement (NCS) for Life Orientation Grade 10 to 12 makes provision for six subjects, one of which is Careers and Career Information. The aim is to: “equip learners with knowledge, skills and values to make informed decisions about subject choices, careers, additional and higher education opportunities and the world of work” (Department of Basic Education: 2011). This aim served as a point of departure for this study to assess its influence on the decisions of blind and visually impaired Grade 12 learners to make informed decisions about their potential career.

It is in Grade 12 when learners make final their career choice. Preliminary career choices are to some extent already made in Grade 10 at which point learners must make subject choices. Failure to make the right subject choice may negatively impact on the career a learner may want to pursue upon completion of Grade 12, the final year of schooling. Learners who are goal-orientated go to school having career choices in mind and know what they want to do after completing Grade 12 (Schreuder & Theron, 1997). Also, a study amongst secondary school learners in Nigeria established that career information is the most frequently sought out of ten possible types of information topics (Adetoro, 2010:53).

The selected ISP models and related research were tested by interviewing 43 blind and visually impaired learners located at five different schools. The specific purpose of this study was to research the information-seeking behaviour of Grade 12 learners who are blind and visually impaired specifically as they search for career information, i.e. what are their plans after completing Grade 12. The 43 learners differed from the rest of the blind and visually impaired population in South Africa in terms of age, demography and socio-economic status. Nevertheless, the characteristic shared by all Grade 12 learners that were interviewed for this study was that they were blind or visually impaired to such an extent that they are not able to read normal print. This attribute has a profound influence on their life and career choices.

4.5.1 Sampling Method and Technique

A mix of rural and urban schools was selected for this study. The reason for this was to investigate whether the location of the school would have any influence on the information-seeking behaviour of the Grade 12 learners across the five schools. The selection of rural and

urban schools was based on the purposive sampling method. Creswell (2003) explains that purposive sampling assists the researcher to select participants or sites that will best help the researcher understand the problem and research question. It does not require random sampling or selection of a large number of participants and sites as in the case of quantitative research – see discussion of low sample sizes in Section 4.5.2. The reason for using purposive sampling in this study is echoed by Teddlie and Yu (2007:84) based on the following factors:

- i. it assisted in addressing the specific purpose related to the research question;
- ii. it allowed the researcher to select the group – in this case, Grade 12 learners - one could learn the most from;
- iii. the sample size was small – see discussion in Section 4.5.2 - and focused on depth of information generated by the learners of the participating five schools since the focus was on narrative data.

Purposive sampling makes provision for various sampling methods. One of these methods is contrast sampling, a method that was applied when selecting the research sites. The five schools have distinct characteristics associated with their urban and rural locations as well as a broad geographical location, viz. Section 4.5.2 for detail of these characteristics. It is a useful method to “explain problems by establishing which factors are associated with them or cause them” (Hardon, Hodgkin & Fresle, 2004:59).

4.5.2 Population and Sample Size

This section must be read in conjunction with Chapter 1, Section 1.6 discussing the delimitation of the study.

Babbie and Mouton (2002:173-174) describe the population as the “aggregation of elements from which the sample is actually selected.” They also describe a “sampling unit” as that element or set of elements considered for selection in some stage of sampling.

There are 23 schools for learners who are blind and visually impaired in South Africa. The Provincial breakdown is as follows:

- i. Eastern Cape (3);
- ii. Free State (2);

- iii. Gauteng (5);
- iv. KwaZulu Natal (3);
- v. Limpopo (5);
- vi. Mpumalanga (1);
- vii. North West (1);
- viii. Northern Cape (1) and
- ix. Western Cape (2).

Only 14 of the schools indicated above are Secondary Schools where Grade 12 tuition is offered – an essential criterion for this study. Some schools accommodate only blind and visually impaired learners while others provide schooling for learners with a variety of disabilities of which blind and visually impaired learners are one group.

Preparatory to establishing the “aggregation of elements” or population size from which to select a sample, the researcher contacted the Principals of the 14 Secondary Schools telephonically to find out the number of Grade 12 learners in each of the 14 schools. It was found that there were in total 99 Grade 12 learners (the aggregation of elements or population size for this study) which is an average of 7,6 Grade 12 learners per school. The lowest number of Grade 12 learners in these 14 schools was one school with zero Grade 12 learners and the school with the highest number had 14 Grade 12 learners. It was not feasible to visit all 13 qualifying schools and to interview 99 learners due to their wide geographical dispersion and associated vast distances between the schools and from the place of residence of the researcher³. In terms of distance, a return trip by road for the closest school is 260 kilometres, and the furthest school is 1297 kilometres. Air travel was not practical because of the rural location of the majority of the schools. An additional challenge experienced was to establish communication with the Principals of the Schools, e.g. non-responsiveness and non-functioning telephone and fax lines, as well as email facilities. Through purposive sampling (see Section 4.5.1) the five schools were selected from 13 of the 14 Secondary schools - with Grade 12 learners. The 13 schools are located across South Africa in urban and rural areas. The purposive selection of the five schools was based on the following criteria:

³ The total land area of South Africa is 1,219,602 km² (471,359 sq mi),(Geography and Climate <https://www.gov.za/about-sa/geography-and-climate>

- i. The number of learners available at each school;
- ii. All schools are Government supported schools following the Curriculum of the National Department of Basic Education in South Africa;
- iii. Approval granted by the Principal of the School and parents of the school to conduct the interviews at the school;
- iv. Approval granted by the applicable Provincial Department of Basic Education to conduct the interviews at the school (one school required written confirmation for this).

An additional school was selected using the above criteria to pilot the research instrument.

The five schools were selected to provide a variety of rural and urban schools. Two schools are located in an urban area and three in a rural area. A balance between historically disadvantaged and advantaged schools served as another selection criterion. Historically disadvantaged schools are schools that, on account of the Apartheid legacy, “face enormous challenges relating to resource acquisition to ensure effective education delivery”. These schools are further characterised by the fact that they are “mostly located in poverty-stricken areas, mostly townships, rural and farm areas” (Xaba & Malindi, 2010:75). These areas were designated during Apartheid for black people and are characterised by poor socio-economic conditions and poor educational infrastructure and resources. Three schools are from historically disadvantaged schools and two from an advantaged background. Last mentioned schools are those that were reserved during Apartheid for white children, and thus better resourced than the previously disadvantaged schools.

The five schools selected provided the platform to select the “sampling units” or sample size from for this study which provided the “elements,” i.e. the Grade 12 learners who participated in the empirical research. The total number of “elements” or the sample size of Grade 12 learners selected was 43. The sampling approach followed for this study is based on what Patton (2015:267) describes as “maximum variation (heterogeneity) sampling”. This sampling approach is to purposefully pick a wide range of Grade 12 learners to in order to get a variation on the dimension of interest (the information-seeking behaviour of blind and visually impaired Grade 12 learners) for two purposes. One is to document diversity (the various information-seeking behaviour of each Grade 12 learner) and secondly, to identify

essential patterns that are common through diversity (the similarities and dissimilarities of the information-seeking behaviour between all the Grade 12 learners interviewed).

There were 14 learners in School A, nine in School B, four in school C, nine in School D and seven in school E. All 43 Grade 12 learners at each of the five schools were willing and available to participate. The numbers mentioned may appear to be a small sample size but is consistent with the research literature reporting small sample sizes when researching blind and visually impaired people. Small sample sizes are discussed further below in this section. Also, the Principal of one of the Schools (School “E”) participating in the research mentioned that the number of Grade 12 learners fluctuate regularly during different academic years. It is not uncommon to report no Grade 12 registrations during some academic years.

The five schools selected from the available 13 Secondary schools are typical in terms of following. They all:

- i. follow the same national school curriculum,
- ii. are resourced by the National Department of Basic Education,
- iii. have a small number of registered Grade 12 learners,
- iv. provide tuition specifically for blind and visually impaired learners,
- v. have similar school facilities and resources, and
- vi. are mixed in terms of gender.

Because these schools shared these common factors, it was expected that data saturation would be reached during the interviews conducted at the two schools investigated in the first phase of data collection. Data saturation occurs when the collection of new data does not shed any further light on the research topic (Mason, 2010). Data saturation is a good indicator that using a bigger sample size providing more data does not lead to more useful information. Keeping Mason’s view in mind, data saturation was reached after 20 of the first 23 interviews that were concluded at the first two schools. The decision to involve three additional schools and, in so doing, to interview an additional 20 available Grade 12 learners, was to confirm the data saturation and to broaden the views expressed by the learners participating in the research.

All 43 Grade 12 learners at the five schools were available and indicated their willingness to participate in the interviews. The small sample size of 43 did not represent an obstacle for the study. Myers (2000:3) states that small sample sizes may be more useful in examining a situation in depth from various perspectives, whereas a large sample might be inconsequential. This view is also supported by Hancock, Ockleford and Windridge (2009:7). The researchers indicated that if the focus of the research is on a specific subgroup of the population and not the general population and “because the subgroup is “special” or different from the general population and that specialness is the focus of the research, the small sample may be appropriate”.

A low population and sample size numbers are typical when researching blind and visually impaired people (Boman, 2006:40). Other researchers confirm this phenomenon. Roy and MacKay (2002:254) studied sixteen students with varying degrees of visual difficulty as part of their study of self-perception and locus of control in visually impaired college students. Cain and Merrill (2001) studied seven visually impaired Master's students as part of their research into distance education. Kinash (2004) researched for her PhD with six blind students who were registered for distance education courses. Cox (2008:1) refers to research conducted with three charities serving visually impaired people in Durham County. The aim was to determine the views of blind and visually impaired people about the services provided by the statutory and voluntary organisation in the County. In total, 44 people participated in the research. Beverley, Bath and Barber (2007:15,27) conducted 28 interviews with 31 visually impaired people to determine the extent information behaviour models could explain the information behaviour of visually impaired people seeking health and social care information. The authors describe how they tried to recruit an “adequate number of participants” but do not provide further information on the number of people participating in the study. It is indicated that data saturation was reached after 24 interviews. They acknowledge the small sample size and that the findings are therefore not generalisable to a wider group.

Although small sample sizes are typical when researching blind and visually impaired people, there are also examples where bigger sample sizes were used in national surveys focussing on blind and visually impaired people. The research done by the University of Birmingham in 2004 was a national research project and involved 1007 people. A follow-up research project

was launched during 2007 using a sample of 502 people, all of whom were also part of the first survey (Douglas. et al., 2009).

Qualitative research is not designed to be representative of a wider population. Small qualitative studies are therefore not generalisable in the traditional sense yet have certain advantages as they attempt to develop meaningful findings which can be applied to similar groups or similar contexts. The face-to-face interviews are one example of how the researcher can probe issues in depth because of the interactivity and responsiveness of the participants (Myers, 2000:1; Beverley, Bath & Barber, 2007: 27; Mason, 2010; Lincoln and Guba, 1985).

4.5.3 Data Collection

Data collection was carried out in two phases. During the first phase of data collection, two schools were involved. The interviews took place during January and March 2018. These schools were purposively selected (see Section 4.5.1 about the selection method) to achieve maximum variation, as discussed in Section 4.5.2. In order to strengthen the findings and validate the model, it was decided to select three more schools to explore the data saturation that was achieved during the first phase. See discussion in Section 4.5.2 about data saturation. The second phase of data collection was also done to enlarge the sample size of the research and so to enrich the findings and recommendations of this study. Data collection in phase two involved three new schools and took place during January and February 2020. The findings of all five schools are presented in Chapter 5, Section 5.3.2. The data collected at the extra three schools did not alter the data saturation status that was achieved during the first phase of the data collection. The main benefit of the second phase of data collection was in expanding the sample size to raise the confidence levels of the data collected.

Data for this study were collected through face-to-face interviews with 43 blind and visually impaired Grade 12 learners. Charles (2011:27) indicates that “visually impaired people can successfully be recruited to take part in research if appropriate strategies are adopted.” He suggests that one cannot be too prescriptive about the best means of communication other than to tailor communication methods to the preferences of the visually impaired individual. Some of the communications strategies to consider apart from direct communication are audio or braille material. Another option to consider is through e-mail. Because of the small

sample size, it was possible to conduct face-to-face interviews with all the learners. It eliminated unnecessary complications and delays in terms of preparing documentation and related administrative arrangements.

A semi-structured interview approach was followed. The interview instrument – see Annexure 4 - was designed containing a list of topics raised with the learners. The interviews aimed to find out what the learner planned to do after completing Grade 12. If he/she was considering studying at a tertiary institution, then topics applicable to that option were asked., e.g. which career; which institution; how he/she made a choice; which information sources were used are some of the topics covered. If the learner indicated that he/she was considering employment a sample of the topics covered included what career/employment opportunity would be pursued; how did he/she decide on this option; what information has he/she obtained about their choice.

Data were audio-recorded during the interviews and transcribed to serve as full audio and written record of the interviews during data analysis. A print copy of the research instrument was used for each interview. This print copy assisted the researcher during the interview to capture additional notes, observations and thoughts relevant to the particular interview. An anonymous number was assigned to each participant by the researcher. This number was written on each of the printed research instruments used during the interviews. It served as a control mechanism linking the interview with the audio recording to assist during the analysis of the data.

4.5.4 The Research Instrument

The interview instrument was the primary research instrument that was used during the empirical research. It ensured that interviews were conducted systematically and consistently. The semi-structured interview method allowed the interviewer to control the interview. However, it also allowed the opportunity for the exploration of topics raised during the interview that were not originally included in the Instrument, but which might add value to the process (Partington, 2001:33). It also assisted the researcher to address all the questions relevant to the study for analysis and interpretation.

An important focus area for this interview was to uncover information about the learners' access to information using technologies, and their use, as well as access to accessible information sources (see Chapter 6, Section 6.2.2.4). The questions covered these aspects as well as the type of assistance they required or received when seeking information, including their use of technologies to access the information. Annexure 5 shows the relationship between the various questions with the research of Moore (2000), Wilson (1999) and Kuhlthau (1991). It also motivates the inclusion of the questions.

4.5.4.1 Structure of the Interview Instrument

The instrument consists of six sections addressing specific components as described and explained below.

Section 1 consists of five questions and serves as a general introduction to the interview. Questions asked included the level and duration of the visual impairment for each participant as well as their preferred reading format.

Section 2 consists of eight questions exploring the learner's access to information technology in general and access to the Internet in particular. Blind and visually impaired people have access to the same technology as people with sight, i.e. cell phones, tablets, and computers but these technologies should have screen reading software to make reading and navigation in documents or websites possible (see Chapter 3, Section 3.3). Some of the learners may also have access to technologies used primarily by blind and visually impaired people to make reading possible. These type of technologies include document readers, braille displays, scanners, audiobook players that can read CD's, USB's, SD-cards, or connect directly to the Internet. This set of questions also enquires about the types of information they access using the technology available and how often. It also establishes how much assistance they needed during information-seeking using technology and the extent to which the information was accessible.

Section 3 consists of one question only, viz. to find out whether the learner has already decided what he/she is planning to do after Grade 12. The response would then direct the interviewer to the applicable section exploring the choice made by the learner.

Sections 4, 5 and 6 of the Instrument address the specific choice indicated by the learner, i.e. whether he/she had decided to study further (Section 4); whether he/she had decided to start working (Section 5) or whether the learner had not decided yet and the reasons for that (Section 6).

4.5.4.2 Testing and Finalisation of the Research Instrument

The research instrument was tested at a different school before the interviews took place at the five selected schools. It was tested for factors such as the use of language, flow, logic and clarity of the interview questions, questions to be added, removed or adjusted and to determine how much time it would take to do the interview. The pilot study acted as a procedural guide to direct the researcher through the interview process (Jacob & Furgerson, 2012: 2). Arrangements were made with the Principal of the pilot school on the telephone and e-mail during October 2017. The purpose of involving the learners of the pilot school was made clear to the Principal of the School. The researcher provided the Principal of the School with the letter that was drafted for the participating Principals of the Schools. The letter provides a clear statement of the purpose of the research as well as the instrument and what would be required from the participating learners. Because the school was already busy with the final exams, it was not possible to interview the Grade 12 learners. On the advice of the study supervisors, pilot interviews were conducted with Grade 11 learners - a total of four learners. Interviews with these learners took place on the 20th of October 2017 at the school. The small number of four Grade 11 learners in this instance is consistent with reports in the literature and other methodological studies which report the same phenomenon (Roy & MacKay, 2002:254; Boman, 2006:40). Also, see discussion earlier in Section 4.5.2 on this topic.

All four learners had low vision – see Chapter 1, Section 1.11.1 - and could sign the Assent Form on their own after the correct place was indicated to them. The interviews went as planned, with no challenges. The learners understood and were responsive to all the relevant questions posed to them. The research instrument ensured that all the interviews followed a consistent approach. It allowed the researcher to build a conversation, keeping it focused on the research topic by setting out in advance all matters to be explored. It assisted the researcher to make the most of the limited time as interviews took place during school time. It also provided the researcher with a clear but flexible “travel itinerary”. However, it did not

specify what would happen during the “research journey”, but it did establish a clear sense of purpose and direction of the journey (Patton, 2015).

One striking observation that was made during the interviews was that the Grade 11 learners were already very clear about what they were planning to do, a year before completing Grade 12. They had already engaged in information-seeking activities in preparation for what they were planning to do after Grade 12. The research instrument was therefore found to be in order, and only minor changes were made to the Instrument to improve the order of the questions, i.e. the sequence of certain questions was changed to ensure that questions addressing a similar topic were clustered together.

4.6 Conducting the Research at the Schools

The interviews at the schools followed the following schedule:

- i. The Principal of the School met the researcher. The researcher shared information about the background and purpose of the study, and the Principal of the School shared information about the school and the Grade 12 learners. The Principal of the School then introduced the researcher to the teacher assigned to assist with any logistical or administrative requirements during the research process.
- ii. The teacher took the researcher to the venue where the interviews took place. All schools provided areas that were quiet and accessible to the learners where the interviews were conducted. Learners were familiar with the venue where the interviews were conducted and required no assistance in getting there.
- iii. The learners were ready at the venue, and the teacher introduced the researcher to the group. The Principal of the School or designated teacher already briefed the learners about their role. The Learners were all eager for the interviews to commence. It was therefore easy for the researcher to inform the group about the study and its purpose, how the data would be collected, and what would be done with it. The learners were assured about their privacy and the confidentiality of their responses. The Research Information Sheet and Assent Form were used as a guide during this group meeting. They were informed about the duration of the interviews. The researcher also provided an opportunity for the learners to ask any questions. They were informed that although they had assented to participate in the research,

they still had the option of withdrawing from the interview process at any time for any reason. There were few questions from the participants, all of a general nature.

- iv. The learners remained in one room while the researcher conducted the individual interviews in another room.
- v. Before each interview, learners were asked to introduce themselves. They were asked to sign the Assent Form and were assisted to do so when required. The interview then commenced.
- vi. Learners were initially a little nervous but were quickly put at ease. The interviews were conducted in English, and no one indicated the need for a translator. All of them were confident and well-spoken, responding readily to the interview questions.
- vii. From the responses to all the questions, it was clear that they understood all the questions. Some learners asked for a broader explanation if they were not sure about the question.
- viii. Each interview lasted between 35 to 45 minutes, depending on the responsiveness of the learner. After completion of each interview, the learners received a small token of appreciation from the researcher to thank them for the participation.
- ix. Upon completion of the interviews, the researcher thanked the teacher and the Principal of the School and departed.

4.7 Data Analysis

The data were captured and analysed by using the Framework Analysis Method described in Section 4.7.1 below (Miles & Huberman: 1994; Lacey & Luff, 2001:9). This method provided a structured method for the capture and analysis of data.

During the analysis of the empirical data, findings related to the research of Moore (2000), Wilson (1999) and Kuhlthau (1991) were considered with particular attention being paid to aspects of information-seeking behaviour which had not been covered by the three researchers. These findings were reported as gaps between the literature and the empirical research findings and are discussed and interpreted as a part of the gap analysis (see Chapter 6, Section 6.4).

Data analysis was used to describe facts, detect patterns and to develop explanations where applicable. During the analysis of empirical data, close attention was given to tendencies, i.e. depending on the nature of the question and what common responses were received confirming similar behaviour or thinking. Once these tendencies had been established, the researcher determined whether there were exceptions to the tendencies, i.e. variations and the reasons thereof.

4.7.1 Framework Analysis: a brief overview and rationale for the application

There are various methodologies one may use to analyse qualitative data. Ratcliff (Ratcliff, n.d.) identified 15 different methods of analysing data. For this research, recording and tabulation of the qualitative data results were done manually using the Framework Analysis method. The reason for selecting this method of data analysis is that it is described as a well-defined procedure which provides a systematic, transparent, accessible and robust approach to qualitative data analysis (Miles & Huberman: 1994; Lacey & Luff, 2001:9). Framework analysis was developed by Ritchie and Spencer in the 1980s (Ritchie & Spencer, 1994). Since then it has been used by different researchers in a variety of fields, e.g. health care (Gerrish et al., 2004); studies about information retrieval from the Internet (Balley et al. 2004) and educational research about student performance (Archer, Maylor, Osgood & Read, 2005) and in the working environment researching information security in the workplace (Blythe, Coventry, & Little, 2015:103-122). The study by Beverley, Bath and Barber (2007) also used this method of data analysis in their study, focusing on the information behaviour of visually impaired people seeking health and social care information. Its defining feature is the matrix output: rows (cases), columns (codes) and “cells” of summarised data, providing a structure into which the researcher can systematically reduce the data, to analyse it by case and by code. A “case” refers to an individual interview conducted. The methodology allows for in-depth analysis of key themes across all the interviews conducted. However, the views of each interviewee remain connected to other aspects of their account within the matrix, thereby ensuring that personal views are not lost. This methodology makes it possible to compare data across cases as well as within individual cases which are essential in qualitative analysis. A “code” is a descriptive or conceptual label that is assigned to selections of raw data collected during the data collection process (Gale et al. 2013:2). It is through these labels that the research data is structured and where trends or specific behaviours become apparent. The

Framework Analysis Method is, therefore, most suitable for analysis of large data interview sets, where it is desirable to generate themes by making comparisons within and between cases. The matrix format provides a structured overview of summarised data.

The Framework Method is most commonly used for the thematic analysis of semi-structured interviews transcripts, thus suitable for the research design in this study. The methodology is explained below in sub-section 4.7.1.1. The Framework Method is not affiliated with an epistemological, philosophical, or theoretical approach. It is a flexible tool that can be adapted for use with many qualitative approaches that aim to generate themes. Framework analysis is, therefore, an excellent tool for supporting thematic (qualitative content) analysis because it provides a systematic model for managing and mapping the data.

4.7.1.1 Framework Analysis: Methodology

The essential characteristic of this qualitative data analysis methodology is that it is a case- and theme-based approach. It makes use of a matrix display; reduces data through summarisation and synthesis; retains links to original data and outputs, allowing comprehensive and transparent data analysis (Ritchie and Spencer, 1994).

Gale et al. (2013:117-124) describe seven stages when applying Framework Analysis. The stages are indicated below with a description of how the stages were applied during the research.

Stage 1: Recording and Transcription

An audio recording of the interviews was made during interviews and transcribed, as mentioned in Section 4.5.3 addressing data collection. The duration of the interviews ranged from 35 to 45 minutes each. All questions on the research instrument were addressed. Where learners gave a brief response to a question, they were asked to elaborate or to give an example. Where the learners' responses strayed from the question, they were allowed to complete their response. Following such a response, the researcher returned to the same question or rephrased it for better understanding by the learner. The handwritten notes and the audio recording to serve as reference were found to be enough for the capturing of the data. A unique alphanumerical identifier was assigned to each interview, e.g. A1 or B1 where the letter denotes the school, and the number refers to the learner.

Stage 2: Familiarisation with the Interviews

After completing all interviews, the researcher familiarised himself with the interviews by listening to all the audio recordings and checking the transcriptions and handwritten notes for completeness and clarity. It assisted with the preliminary identification of the coding topics.

Stage 3: Coding

After familiarisation, the researcher captured all data based on handwritten notes, audio recordings and transcriptions. Data captured included:

- i. substantive phenomena (e.g. behaviour or actions), values (e.g. those that inform or underpin certain statements, such as a belief or an opinion not necessarily based on facts),
- ii. emotions (e.g. uncertainty, excitement, frustration, happiness) and
- iii. impressionistic/methodological elements (e.g. where the learner found something difficult to articulate or where the learner showed his/her discomfort during a response).

Researcher subjectivity is acknowledged with these observations. After listening to all the audio recordings of the interviews data were collated thematically which assisted with the systematic coding. The researcher identified statements made during the interviews that were not clearly expressed; two such statements from two different interviews were excluded from the analysis. The rest of the statements made during those two interviews were used in the study.

Stage 4: Developing a Working Analytical Framework

After listening to the audio recording of the interviews and reading the transcription and research notes, the researcher standardised the analysis process by developing a working analytical framework. This facilitated consistency of approach during the analysis of the interviews. Data were grouped into the framework that emerged after doing the high-level assessment of the interviews. According to Thomas (2003), most inductive studies (see

discussion in Chapter 5, Section 5.2) report between three and eight main categories in the findings. Critical features of analytical categories, according to Thomas (2003:240) are:

- i. a label for each category;
- ii. description of a category;
- iii. test or data associated with the category;
- iv. links, i.e. each category may have links or relationships with other categories;
- v. type of model in which categories are embedded, i.e. the category system may be incorporated in a model, theory, or framework.

Findings for this study were grouped into four categories indicated in Table 4.1 according to the abovementioned features:

Table 4.1 Framework analysis: Analytical categories identified following empirical research

Category label	Description	Data associated with a label	Category links	Embedded model
1. Information technology and access.	Assistive technologies (hardware and software) used by learners to access digital information.	Use of cell phones, personal computers, the internet.	i) Information-seeking confidence and success. ii) Information-seeking process.	Inclusive Information-Seeking Model.
2. Information sources used	Various information sources used by learners during information-seeking.	Braille, Internet, family, friends, teachers, library.	i) Information technology access and use. ii) Information-seeking process.	Inclusive Information-Seeking Model.
3. Information-seeking confidence,	Level of confidence and success expressed by	Own information-seeking experience	i) Information technology and access.	Inclusive Information-Seeking Model.

Category label	Description	Data associated with a label	Category links	Embedded model
purpose and success.	learners about their information-seeking abilities.	reported; approaching other people to assist during the information-seeking process	ii) Information sources used. iii) Information-seeking process.	
4. Information-seeking process.	The methodology of information-seeking applied by learners as part of their information-seeking process.	Determining information need; sources used; technologies used; the level of support required during the information-seeking process; confidence levels with the information-seeking process described.	i) Information technology and use. ii) Information sources used. iii) Information confidence and success.	

The data capturing and categorising of this research complied with the critical features of analytical categories identified by Thomas (2003:240) as mentioned above, thus constituting an analytical framework. Some data did not fit into the data structure but were captured for consideration during analysis.

Stage 5: Reviewing the analytical framework

After capturing all data, the analytical framework was reviewed and compared with the audio recording, written notes and transcription to verify that everything had been captured. It was also reviewed in terms of clarity for analytical purposes, e.g. to ensure that the findings of the five schools were not conflated or that additional statements and comments were correctly linked to a category topic. Data capturing was done on an Excel Spreadsheet.

Stage 6: Charting Data into the Framework Matrix

Charting involved summarising the data by category for all the interviews captured. The summary included references to interesting or illustrative responses and any other applicable notes. See Annexure 6 for the charting of empirical data.

Stage 7: Interpreting the Data

The researcher made notes during the interview in a computer file noting impressions, ideas, interpretations, or anything of potential value during the analysis of the interviews. During the interpretation process, specific characteristics of and differences between the data were identified and theoretical and practical concepts identified – see Annexure 6. Mapping of connections between categories to explore relationships and causality between responses and categories of responses were also indicated. It was anticipated that if the data were rich enough, the findings generated through this process would go beyond a description of cases to explanation. For example, explaining reasons for the emergence of a phenomenon, or how a learner is likely to initiate or respond to a situation, or identifying areas that are not functioning well in the information-seeking process. The analytical process was intensive and extensive, taking a long time since this formed the crux of the research, i.e. the comparison of the findings with that of the information-seeking behaviour models of Wilson (1999), Moore (2000) and Kuhlthau (1991).

In summary, the Framework Analysis method served as a useful data analysis tool for this study.

4.7.1.2 Framework Analysis: the advantages and disadvantages

The researcher was aware of the positive and negative aspects associated with Framework Analysis as a data analysis methodology and how it might affect the research analysis process.

Some of the positive aspects of the methodology are:

- i. It assisted to summarise data during the charting process. It is, therefore, a useful way to reduce data systematically, making it easier to engage with the data. The charting process assisted the researcher to pay close attention to the description of the data by using each participant's subjective responses in the process of interpreting the data. Although the data of each interview were summarised individually, it was also contained within the broader context of the amalgamation of all the other interviews, thereby making it possible to use comprehensive descriptions paying attention to meaning and understanding.
- ii. The matrix structure was visually uncomplicated and facilitated the easy recognition of patterns in the data, as well as contradictory data.
- iii. The matrix approach was also not restricted to the capturing of the interviews only. Notes that were taken during each interview, the audio recording and the transcription supported the capturing of the data.
- iv. Because it is not aligned with a pre-conceived viewpoint or theoretical approach about the objective of the study, it could be adapted for use in inductive or deductive analysis or a combination of the two as described in Chapter 5, Section 5.2.
- v. It also provided a clear audit trail from original data to final themes with verbatim quotations, where applicable.

There are also several potential drawbacks associated with the Framework Analysis.

- i. The systematic approach and matrix format may appear as an attempt to quantify qualitative data, e.g. "nine out of 15 participants said X". This sort of analysis could not be avoided, and specific quantification references were used where appropriate. Generic references such as "some learners" or "not all learners" were used where appropriate to avoid specific quantity references. Quantification was used in the reporting of the findings, as suggestive of a trend.

- ii. It may be a time-consuming process. This aspect was factored into the research project from the beginning. In the case of this research, the time factor was less of a challenge since the sample group was small. The time it took to do the interviews, and the analysis of those interviews was manageable.
- iii. It takes time to learn how to code, index, and chart data. Time is also spent to think reflectively and avoid subjectivity that may influence the analysis process. It is also essential to understand the methods of generalisation. Polit & Beck (2010) provide the following descriptions of generalisation and mention that it is all aspects of sound methodology.
 - a. Analytic generalisation (generalising from the particular to a broader construct or theory)
 - b. Transferability (the use of findings from one research and to apply it to a completely different group of people or setting)
 - c. Statistical generalisation (the use of random sampling by quantitative researchers to identify the population to which they wish to generalize their results.

Because of this approach, there is also a danger that it may become process- rather than outcome-focused (NatCen Learning, 2012). It was acknowledged that this might be initially a challenge. However, with the relatively small number of interviews conducted and the focus on the research question, it was not a problem to identify themes during the analysis.

Although the Framework Analysis Method makes it possible to categorise and organise what may appear to be big qualitative data in a systematic manner, it does not provide the answers as to how to make analytic choices. Nor how to make interpretive strategies visible and auditable. Also, it may lead to forcing data into categories or themes they do not fit into (NatCen Learning, 2012). Qualitative research skills were applied to interpret the matrix appropriately and facilitate the generation of descriptions, categories, explanations, and typologies. Interpretation of the analysis results was based on the literature study and the theoretical framework, experiences gained during the interview process, experience in the field of librarianship and many years devoted to rendering library and information services to blind and visually impaired people.

4.7.2 GAP Analysis

The data thus organised and categorised was further refined through a Gap Analysis to generate outcomes capable of feeding into the Inclusive Information-Seeking Model. The Gap Analysis is described and discussed in Chapter 6, Section 6.4. This Gap Analysis was used to compare the empirical results of this study with the Information-seeking Models proposed by Kuhlthau (1991; 2008), Moore (2000) and Wilson (1999). Seven gaps were identified, and strategies were developed to address the identified gaps; these are discussed in Chapter 6, Section 6.5.

The Gap Analysis was conducted in the following manner:

- i. After analysing the data available in the literature about the most widely accepted information-seeking behaviour models, i.e. of Moore (2000), Kuhlthau (1991) and Wilson (1999), a combined schema was formulated based on the agreed information-seeking behaviour elements. Six information stages were identified and discussed in Chapter 6, Section 6.3.
- ii. This combined Information-seeking Behaviour construct was compared to the findings of the empirical study presented in Chapter 5. The gaps served as one of the scaffolding components in the formulation of the Inclusive Information-Seeking Model, reflecting the information-seeking behaviour of blind and visually impaired Grade 12 learners.

In summary, the empirical research design of this study adheres to the qualitative research methodology, as described in Section 4.5. It is applied with special consideration when researching blind and visually impaired people, as described in Section 4.3.4. The result of this is discussed in Chapter 5 addressing the findings of the empirical research.

Chapter 5: Research findings

5.1 Introduction

The purpose of Chapter 5 is to report on the analysis of the data and findings of the empirical component of the study conducted at five selected Schools for the Blind. The selection methodology was discussed in Chapter 4, Section 4.5.2. Two urban schools were located in two different coastal Provinces of South Africa. Three rural schools were located in two different coastal Provinces and one in an interior Province of South Africa. The names of the schools and participants are not disclosed in keeping with the guarantee of confidentiality. The set of documents used during the interviews, i.e. the research instrument, letter to the Principal of the School, ethical clearance form, the information sheet providing information about the research and the assent form to be signed by the learners are described in Chapter 4 and presented in the Annexure Section at the end of this thesis.

The findings are set out in the following sequence. In the first instance, general observations are made about the learners interviewed. These include their information-seeking approach, the environment in which information-seeking took place and the status of their information-seeking activity. The findings of each of the five schools are presented separately according to the structure of the research instrument. Finally, the research results of the five schools are consolidated according to the Sections of the research instrument. Observations and linkages strengthen the consolidation to other research from the literature and recommendations where appropriate. The findings reported in this chapter serve as a reference for Chapter 6, where they are mapped to the conceptual framework in a gap analysis. These processes allow for the generation of an IISM for blind and visually impaired people.

5.2 Interpretation of the Data

Following the interviews at the five schools, the data were analysed by using the four categories identified in the Framework Analysis described in Chapter 4, Table 4.1 and

summarised in Annexure 6. The research adopted an inductive, i.e. moving from the specific to the general, and elements of the deductive approach, i.e. moving from the general to the specific to make sense of the data. With the inductive approach, the participants' views were used to build broader themes, see the discussion of Salient Features in Chapter 6, Section 6.6.2 and Information-Seeking Principles in Section 6.6.3.that serve as input for the IISM of this study (Soiferman, 2010:3). The purpose of the inductive approach, consistent with the Framework Analysis was to:

- i. Condense extensive and varied raw text data, i.e. data from the audio recordings, transcription and notes of the researcher, into a summary format
- ii. Establish clear links between the research objectives and the summary findings derived from the raw data. Annexure 6 served as a reference for this.
- iii. Develop a model or theory about the underlying structure of experiences which are evident in the raw data (Thomas, 2003:238). The model is addressed in Chapter 6.

Some themes, e.g. technology and sources used, were pre-selected based on the literature and theoretical framework. This approach is in line with the deductive methodology. These themes were incorporated in the research instrument and tested during the interviews. The testing also allowed for the generation of new themes, e.g. information-seeking confidence and success.

The combined approach is appropriate because the research had some specific issues to explore, e.g. what information sources Grade 12 learners consult most frequently when searching for career-related information. The research also aimed to leave space to discover unexpected aspects of the participants' experience or how they assigned meaning to their experiences. The method of data analysis was based on both the research objectives (deductive) and multiple readings and interpretations of the raw data (inductive). The findings were consequently derived from both the research objectives as formulated by the researcher and the findings arising directly from the analysis of the raw data (Thomas 2003:239). The Framework Analysis method was thus adapted for use with deductive, inductive, or combined types of qualitative analysis (Gale et al. 2013:117-124).

5.3 Observations and Findings

This Section consists of two sub-sections. In the first sub-section, general observations made during the interviews are provided. These observations provide general background and context to what transpired during the interviews with the learners. The observations are based on patterns of consistent responses and characteristic behaviours displayed by the learners. The second sub-section provides detailed findings for each of the schools separately. The findings are presented per Section of the Research Instrument. This format of presentation of the data facilitates the discernment of correspondence between the different sets of data before a consolidated summary of findings is presented in Section 5.4.

5.3.1 General Observations

In total, 43 Grade 12 learners were interviewed. Thirteen were male, and 30 were female. All the learners were 17 years of age. Thirty-seven had low vision, and six were blind. All Grade 12 learners at each school were available on the day of the interview and participated in the interviews. As discussed in Chapter 4, Section 4.5.3, data collection was done in two phases. During the first phase, 23 learners were interviewed, and 20 learners were interviewed during the second phase. A breakdown of the number of registered Grade 12 learners per school is provided in Table 5.1. All registered Grade 12 learners at the five schools participated in this research.

Table 5.1: Grade 12 learners per school participating in the research

School	Number of Grade 12 learners
A	14
B	9
C	4
D	9
E	7

All the learners interviewed participated in a friendly, open, enthusiastic, and responsive manner during the interview. Although some were a little more nervous and shyer than others, all came across confidently. They understood the questions with ease, asked the researcher to repeat a question if they had not heard the question properly or to explain if

the question was not immediately clear to them. All learners responded to the questions without hesitation. Where they did not have a response, the researcher noted this. Some did not just respond to the question but also elaborated without any prompting from the researcher. With some questions, prompting was necessary where there were mixed responses. A few asked for additional guidance and advice about their information-seeking options to find the information about their planned tertiary studies.

One finding stood out after concluding the interviews with all the learners from the five schools. Most of the learners (38 of the 43 learners) had decided what they were planning to do after completing Grade 12. Thirty-eight learners indicated that they would be pursuing a tertiary career, and five learners were still undecided. This finding was further strengthened by the learners who responded positively to Question 4.1. where the learners indicated that they had started to seek information about their study choice. This response indicated that they had not only decided about their future but that they had actively followed up by getting more information about their choice and its requirements. In some instances, learners mentioned that information-seeking had taken place during their Grade 11 year. The same finding was made during the pilot interviews with the learners of the School for the Blind, where the research instrument was tested. The pilot interviews took place towards the end of the 2017 school year. It is of interest to note that the five undecided learners who had not yet started with the information-seeking process did not claim their visual disability as a reason. The reasons these learners provided for not deciding yet are provided in Section 5.4.5.

The learners who had already initiated the information-seeking process conveyed a sense of purpose and hope for their future. They conveyed a sense of self-assurance, indicating that they expected to qualify in their chosen field of interest and to start a career afterwards. There was little mention that their disability might be a possible deterrent to achieving their objective to qualify and to secure employment afterwards. They were optimistic about their future, but they were aware that their disability might pose certain challenges during the information-seeking process and when studying. It was clear that they have accepted their visual disability as part of their lives and that they will continue with their lives regardless. They did not see their disability as a condition that should hold them back. This confidence was emphasised by one learner who mentioned that she was interested in becoming an air hostess. Not one of the learners who indicated their intention to study further mentioned

that they were scared or hesitant about their decision because they did not know how it would work out for them.

Although some learners were very clear about their choice of study, some were uncertain about the specifics of the study choice and therefore mentioned a generalised study field without knowing if there is a relevant course at any tertiary institution. For instance, one learner stated that he was planning to study “marketing” but was not sure what it exactly meant in terms of subjects or what type of career one would pursue with such a qualification. This learner was interested in advertising which is one component of the marketing field. Other learners also indicated that they were interested in studying “Drama”, “Social Services”, “Entrepreneurship” or “Information Technology”. All these fields of interests are vague descriptions of general study fields rather than a university qualification.

Although most learners had decided to pursue tertiary studies, some were very relaxed about the time available to obtain the information to plan and to meet registration deadlines and requirements. It appears as if “next year” was still far off and that the current Grade 12 year offered them ample time to obtain the information for which they might still be looking.

Another major observation applicable to four of the five schools was the lack of a functional school library. At the school with a library, there is a school librarian responsible for the library. The library is not a popular place to use for the learners. The Librarian controls access to computers in the library, and learners must ask permission to use the computers and pay when making print-outs of information. Library material is either outdated, or the collection consists mostly of general reading material. While learners could request access to the library, which was not generally accessible to the learners, the material was not relevant to their information needs related to their tertiary studies. It was interesting to note that learners were sufficiently confident to look for information on the Internet on their own devices. Despite their confidence, they still expressed a need to have access to a fully functional school library where they could be assisted to find the information for which they were looking. As one learner put it: “It would be nice to go to our school library and get all the information I am looking for there”. Another learner thought of the community and suggested: “to have a library in town with braille books and computers to do searches if you do not have data.”

The choice of urban and rural schools was to establish whether there would be a difference in the information-seeking approaches of the learners in the schools of those two locations and whether learners of one school would have better access to information than the other. The research could not discern any distinction between the schools in this regard. Learners' at all five schools struggled with the same issues. The learners of the two urban schools were better informed about Disability Units at Universities than those learners from the three rural schools. A plausible reason is that urban schools are in closer proximity to several tertiary institutions compared to rural schools.

The learners of the five schools were at the same elementary level in terms of understanding what they wanted to know about their tertiary study options. All the learners also had access to the Internet and other general information sources (e.g. people) to assist them with their information-seeking activities.

The following Section provides the responses to all the questions in the research instrument.

5.3.2 Breakdown of Findings per School

To ensure anonymity the five schools where the interviews were conducted are not named. Names of learners are also not mentioned for the same reason. A total number of 43 Grade 12 learners were interviewed as discussed in Chapter 4, Section 4.5.2 and Chapter 5, Section 5.3. An overall gender breakdown figure for all learners interviewed was provided in the introduction of Section 5.3.1. Gender distinction was not a factor in the analysis of the data for each school. The research literature, moreover, does not address the issue of gender. It was determined during the empirical research of this study that gender did not influence the information-seeking need and behaviour of the learners. Learners were identified by an alpha-numeric number assigned to each, to distinguish between them individually, and from which school they are, e.g. A1 and B1. The same research instrument was used at all schools. Responses to the questions per Section are presented separately for each school, as is the analysis of the findings.

5.3.2.1 Findings at School A

Question 1.1 about their favourite school subject is a general introductory question to start the interview and to put the learner at ease, therefore not offering a substantive finding.

Question 1.2 is concerned with the level of visual impairment. All 14 learners interviewed indicated their visual status as Low Vision – see definition in Chapter 1, Section 1.11.1.

Characteristics of the sample

School A is an urban school. 14 registered Grade 12 learners were interviewed. Three were male and 11 female. All learners were 17 years of age, and all of them lived with low vision from birth or the major part of their life, i.e. seven years or more. They were accustomed to the challenges of low vision or blindness in their everyday life and specifically concerning reading and access to published information. They continued with their lives within the reality of their disability. The learners acknowledged that their visual disability made information-seeking more difficult and that they were not always able to find the information for which they were looking. The information-seeking process was a slow process for these learners. Only one learner indicated an additional disability, i.e. hearing loss in one ear. For this study, this condition can be ignored because the interview could proceed in a normal talking tone, and it was also not raised by the learner as an additional impediment during information-seeking.

The majority of the 14 learners indicated large print as their preferred reading format, i.e. a font size of 18 points and higher. Reading material in the standard font size used in printed and electronic media, i.e. 12 points was, therefore, not accessible to this group of learners. Four out of the 14 learners who identified large print as their preferred format also mentioned braille (one), audio (one) and electronic format (two) as alternative preferred formats. At school, they all received their learner support material in large print and used it with ease.

Section 2 findings: Access to Technology and the Internet

As mentioned earlier in this chapter, blind and visually impaired people have access to the same technologies as people with sight, e.g. cell phones, tablets, and computers. These technologies should have screen reading software to make reading and navigation in documents or websites possible for blind and visually impaired people.

Various technologies are available to blind and visually impaired people to make access to information possible and to allow them to read accessible reading material. Some of these

technologies are document readers, braille displays, scanners, audiobook players that can read CDs, USBs, SD-cards or connect directly to the Internet. Due to the high cost of technology hardware and software, it was anticipated that the learners' access to a great variety of technologies would be limited. This unfortunate reality was confirmed with only four of the 14 learners indicating they had access to computers and other assistive devices at home. All 14 learners had access to computer technology at school, and three had access outside the school environment. Having mainly access to school computers only implies that most of the learners were limited to school hours so that they could freely use a school computer for their information searches. This limited access to computers is effectively a time restriction given the activities of the school programme.

All 14 learners had their cell phone, which they used for information-seeking purposes. They were limited in terms of time spent seeking information on their phone because of cost constraints. Most learners (eight of the 14 learners) indicated their preference to use a PC rather than a cell phone when seeking information. Two of the main reasons for this preference were that it is easier for a person with low vision to read on a PC than on a cell phone because the PC screen is bigger and can accommodate a bigger font size better. A second reason why the PC was preferable for this group is the Internet cost. At school, they could use the Internet for free while they used their phone at their own cost. The school does not have Wi-Fi. The learners had to go to a computer lab to use the technology available.

School-related topics were the main reason for accessing the Internet. Personal and general type of information-seeking was insignificant for this group of learners. Surfing the Internet to just browse trending topics in the learner's field of interest and the use of Social Media was equally low. The cost to access the Internet was mentioned as a prohibitive factor. Using a cell phone for searching and texting was not the most convenient tool for all learners due to the small screen and touchscreen buttons. This reality is supported by most of the learners from this group who indicated that they needed assistance when using the Internet. Although usage of the Internet was low, all learners had Internet exposure and could respond to the question about web page accessibility. Six of the 14 learners found the web pages inaccessible and confusing. Learner A5 mentioned that, "there are too many links to follow" when searching for information and that he/she would prefer a single answer to the question typed

in the search engine. Additional challenges raised with the web pages were font size, screen contrast settings and web pages that are not customised for cell phones.

Section 3 findings: Information-seeking behaviour (general)

There was only one question in this Section. Learners had to indicate whether they had already decided to study further after school, start a job or if they were undecided. The choice was important to guide the interview in terms of the follow-up questions. Most of the learners, 13 of the 14 learners, had decided to continue with tertiary studies. One learner was still undecided. The fact that most of the learners had made up their mind suggests that these learners did not regard their low vision status as a barrier to pursuing their aspiration to obtain a qualification and to improve their employability. The fact that they had already made this decision early in Grade 12, and in some instances even earlier, suggests that they were future-oriented. They did not regard their visual disability as a reason that should delay decisions that would have an impact on their future. The learner who indicated that he was undecided about his future studies indicated an interest in Business Studies but had not yet pursued information about the study options in this field. This learner came across as apprehensive and uncertain, which might explain why he had not yet decided about his future study options.

Section 4 findings: Information-seeking behaviour (study focus)

Most learners (11 of the 14) had started to seek information about their study choice. The two learners who had not yet actively initiated information-seeking were not passive. They were waiting for the open day event at their tertiary institution - in other words, they had made a conscious decision about the timing and method of their information-seeking. One learner was still undecided.

The type of qualifications the learners intended to pursue are:

- i. Psychology
- ii. Law
- iii. Marketing
- iv. Social Work

- v. Business management
- vi. Journalism
- vii. Drama
- viii. Sports Science

Learners used various but a limited number of sources of information. Considering the nature of the information required, i.e. information about tertiary studies and related information, some of the sources ranged from authoritative (e.g. information sources from Tertiary Institutions) to less authoritative (e.g. parents and friends). The most popular source of information was friends and parents, as indicated by nine of the 11 learners. This information source was preferred because friends and parents were readily available for discussions. The preference to use interpersonal information sources by visually impaired people is addressed in Section 5.4.4, where results are summarised.

The fact that not one of the 11 learners used a library as a source of information is a matter of concern. Two reasons were mentioned. One is that there was not an operational library at the school. Although there is a school library, it is only open by request. The second reason is that the local public library was not accessible for blind and visually impaired people. The library collection and technologies in the library appear to be inaccessible for blind people. Learner A3 confirms this by stating: "My local public library only has reading material for people who can see."

The eight learners who indicated that they had used the Internet to seek study information may appear to be contrary to the response given earlier in Section 2 about Internet use. It should be kept in mind that Section 2 tested the information-seeking behaviour of learners in general. In contrast, Section 4 tested information-seeking in terms of the learners' specific study information needs. It was therefore understandable that the Internet would have a high use due to the nature of the information required. Study information was generally more accessible on the web pages of tertiary institutions and less so in other published formats for blind and visually impaired people. The fact that the use of the Internet was indicated as a preferred source, therefore, makes sense. The challenges of inaccessibility, as discussed in Section 2, however, remains. Although only one learner (A2) mentioned the career expo as a good source of information, this does not mean that it is less important as an information

source. The value of career expos was highlighted by learners at the school for the blind in the Eastern Cape where the research instrument was tested; only one learner mentioned it at School A.

Each of the eleven learners' information-seeking activities focussed on topics relevant to their post-school plans. The range of information topics is:

- i. More about the qualification in which they were interested, e.g. what is involved and what is required.
- ii. Whether their personality suited the requirement of the qualification in which they were interested. In this case, the learner hoping to be a psychologist.
- iii. How long it would take to qualify.
- iv. Which tertiary institutions were offering the qualification in which they were interested?
- v. When did the academic year start?
- vi. What is required during for the application?
- vii. What subjects were required when studying for a specific qualification.

Most learners (seven of 11) were satisfied with the information they had found indicating an encouraging level of information-seeking success. Learners indicated that once information was located, they did not explore additional information sources to expand or verify what they have found. The accuracy of the information found addressing the information-need was not tested. It was outside the scope of the investigation. Two of the learners could not convincingly formulate what information they were seeking. Upon asking learner A7 what type of information he/she was looking for the response was: "There are so many things to find out. I do not know exactly where to begin." Learner A10 indicated his/her interest in studying "Business Management". Upon asking what information he/she required response was: "I am not sure." These responses suggest that some learners were experiencing challenges with the formulation of search strategies and search terminology.

All 11 learners collected and stored the information selected in a filing system which they could easily refer to at a later stage. Print-outs of information were kept in a filing system. One learner made notes which were filed, and two learners saved the information on their phone or PC. This filing system assisted them to avoid repeating an information-seeking activity and gave them instant access to their information.

Most learners (nine out of eleven) indicated that they required assistance with the interpretation of the information that they had found. This response is consistent with those responses arising from Question 2.7 enquiring whether learners needed assistance when using the Internet, with ten of the 14 learners indicating that they required assistance with Internet searches. This response confirms a key factor for the information-seeking process by blind and visually impaired people. Although human assistance may not be a constant requirement, it is of great value and assurance to blind and visually impaired people.

Eight of the nine learners who had initiated their information-seeking found people generally willing to assist them with how to use the information they had found. Only one learner (A6) found people not to be supportive. People generally require assistance when seeking information. In the case of visually impaired learners, this involves giving assurance that they have identified relevant information and assisting them to understand what to do with it. If people are perceived to be non-supportive, then one can assume that the learner would feel insecure about the results of their information search and how to utilise the information appropriately.

The level of awareness of potential information provisioning organisations or structures was minimal. Only three learners of the 11 were aware of the South African Library for the Blind (SALB) and the South African National Council for the Blind (SANCB,) as two examples of information provisioning organisations. More learners (six of eleven) were aware of the Disability Units at Universities able to assist them with finding relevant information. This awareness may be due to the proximity of the school to several tertiary institutions. The low level of awareness about organisations that may assist learners is a matter of concern. This low awareness is based on the earlier comment that information-seeking success would be enhanced if learners received more support during the information-seeking process.

Learners raised only four issues related to their background or environment, which could affect their information-seeking processes. The four issues were:

- i. limited data time on their phones for information-seeking;
- ii. inaccessible phone screens;
- iii. uncertainty about search strategies and terminology and
- iv. personal safety

One learner (A4) mentioned the activities of gangs where she resides: "I cannot walk anywhere because of gangsters in our neighbourhood." This social matter is a safety threat preventing the learner from moving freely around in her neighbourhood to find information from other people or organisations, such as the local public library or other relevant community organisations. Although such examples represented daily challenges experienced by the learners, it appears that personal living circumstances had a low impact on the information-seeking activity of the learners interviewed.

A question was asked about their willingness to reformulate a search inquiry to understand the level of confidence of learners in finding information. Most of the learners (nine of eleven) indicated that they usually reformulated the search questions when seeking information if they were not satisfied with the search results. Their effort is a promising approach, especially for a person with a sight disability exposed to many challenges during information-seeking. It would be easy to just terminate the information-seeking activity due to the cumbersome process and perhaps look for other means to find the relevant information. The response of two other learners confirmed this. Although one learner acknowledged feeling uncertain about using the Internet, all 11 learners indicated that they had confidence in their ability to find the information for which they were looking using the Internet. This confident attitude for a person with visual impairment is encouraging since they must overcome many obstacles when seeking information. If the learners lacked confidence, it might be assumed that the information-seeking experience will be a failure from the start. The response by learner A11 to the question about suggestions to improve information accessibility for people with visual disabilities sums up the attitude succinctly: "Never give up trying when searching for information."

The last question in Section 4 covers suggestions by the learners on how to make information more accessible to blind and visually impaired people. Their responses reflect their encounter with barriers and recommendations on how to mitigate the problems:

- i. websites should be updated more frequently;
- ii. the option to change the contrast of colour and enlargement of text on the website to improve readability;
- iii. access to knowledgeable people to assist with information-seeking and the interpretation of the information found;
- iv. a non-functional school library;
- v. the school failing to provide them with time to actively search and engage with information sources and with people outside the library such as career counsellors

The above is a summary of the responses of those learners who had decided on their future studies and initiated the information-seeking process to enable them to make certain decisions at this stage. Two of the 14 learners interviewed, however, had not started with the information-seeking process. One learner mentioned his visual disability as the main stumbling block. However, he had made up his mind to study after Grade 12 and had spoken to people generally about his options. It appears that he had not made good progress and was therefore still unsure of his future study direction. The second learner could not give a reason why he had not started with the information-seeking process. From the interview, it appeared that this learner was very shy and uncertain and would need a great deal of assistance to guide him in making up his mind. Consulting a career counsellor for both learners would be a great advantage.

Section 6 findings: Learners who had not decided yet

The finding that only one learner (A12) had not decided what to do after completing Grade 12 is striking in comparison with the responses from the other learners. They had decided what they were planning to do after completing Grade 12. His response to Question 6.1 was striking, i.e. "I do not know what career choices there are for me". The learner made no mention of sharing information or ideas with friends about future options. The learner indicated that he had not approached any person or consulted any information source, which

is in line with his response in Question 6.5. He had delayed the information-seeking process because his experience was that information-seeking was difficult for him as he was often overwhelmed by the information found. His explanation and the fact that he was unsure about study choices explain why he was not able to make a study choice decision.

5.3.2.2 Findings at School B

Question 1.1 about favourite school subjects is a general introductory question to get the interview going and to set the learner at ease and is, therefore, not of direct relevance to the study. Question 1.2 assesses the level of visual impairment. Six of the nine learners interviewed indicated their visual status as Low Vision, and three were blind.

Characteristics of the sample

School B is in a rural area. All of the nine Grade 12 learners were interviewed. Six learners were female, and three male. As with School A, all learners were 17 years of age. Three described their visual status as “blind”, and the remaining six indicated that they have “low vision”. Eight learners had lived with their visual impairment since birth and one since the age of five. They adjusted to this reality of their lives. Learner B1 said: "Because of my sight problem, I am used to it that it is difficult to find reading material I can read." Five of the nine learners preferred large print, while three preferred braille and one learner preferred the electronic reading format.

Section 2 findings: Access to technology

The fact that all nine learners had access to technology only at school and not at home is not surprising. School B is in a rural area where access to information technology due to various socio-economic reasons is challenging. The school, therefore, serves as a good access point to available information technology. The fact that all nine learners had their cell phone is not contradictory to the above statement. Cell phone technology is cheaper, more accessible, and easier to handle for these learners. Citing the cost factor, three of the nine learners indicated that they had a phone for calling, but no data plan to use the Internet. Five of the nine learners indicated that they used their phone to access the Internet. However, it is assumed that this did not often happen since seven of the nine learners indicated their preference to use the

PC for Internet searching. Only two learners who indicated that they used their phone for information-seeking indicated that they preferred the phone to the PC for information-seeking. It is assumed that the preference to use the PC for Internet searches is because it was available at school. It is easier to interact with a PC than with a phone and that there was no cost involved in using the PC at school.

It is not surprising that all nine learners sought mostly school-related information because that was their current reality and need. The fact that seven of the nine learners indicated that they searched the Internet for information of general interest is an indication that the learners had interests outside the school. The use of Social Media platforms was limited, with only four out of nine learners using WhatsApp and three using Facebook. This low usage can be explained by the fact that it was not easy for visually impaired people to interact with a cell phone due to small buttons and screens and the absence of talking software. There are also data costs involved in accessing these platforms via the Internet. The low frequency of use confirms this point.

Only three of the nine learners used the Internet daily; the rest used the Internet a couple of times per week or month. Although the Internet is later mentioned as a preferred information source, it was not used daily by most of these learners. One may assume that if cost and access were not factors, these learners would use the Internet more frequently. The fact that five of the nine learners indicated that they required assistance when using the Internet confirms one of the reasons why these learners did not use the Internet more often. They were dependent on the willingness and availability of sighted people to assist them, thus putting an additional burden on the information-seeking process.

Just more than half of the nine learners indicated that they find webpages accessible. This response is a slightly higher number compared to School A where less than half of the learners indicated that they found webpages inaccessible.

Section 3 findings: Information-seeking behaviour (general)

The nature of their visual disability had no bearing on the two learners who had not yet decided what they were planning to do after Grade 12, one of whom was blind while the other had low vision. The reason was explained in Section 6 of the questionnaire. The learners

mentioned lack of finances and uncertainty in terms of the most suitable qualification to pursue. In both these cases, career counselling would have been of great assistance to the learners. It is encouraging to note that most of the learners had already made a study decision. From the interviews, it was clear that the learners did not use their visual disability as a reason to keep them back. They were enthusiastic about their future study prospects and wanted to make something of themselves in the future.

Section 3 findings: Information-seeking behaviour (general)

Of the nine learners interviewed, seven indicated that they were planning to pursue tertiary studies. Two learners were still undecided; their reasons are explored in Section 6 below.

Section 4 findings: Information-seeking behaviour (study focus)

Six of the seven learners who indicated that they were planning to study further after completing Grade 12 had already started the information-seeking process. Some had already found information but were still looking for additional information. From the variety of study options mentioned, it is interesting to note that the visually impaired learners did not confine themselves to a limited number of career options because they were blind or visually impaired. This free thinking is in line with the view of the American Foundation for the Blind (2019) that blind and visually impaired learners are interested in and able to do the same job as sighted learners. There is not a separate list of careers only for blind and visually impaired people. Visually impaired job seekers approach the topic in the same manner as sighted learners, and that is to pursue careers based on their skills, abilities, interest and values (American Foundation for the Blind, 2019). The learners were guided by their passion and interest rather than visual disability when making choices that would affect their future. They were also not all following each other or planning to study for the same qualification or at the same tertiary institution. The learners indicated their interest in the following fields of study:

- i. Law
- ii. Tourism
- iii. Media studies
- iv. Accounting

- v. Social Work and
- vi. Hospitality business

As with School A, it is of concern that the learners from School B also did not have access to a library where information-seeking could take place. Also, the lack of a librarian or person working in the library to assist them had been mentioned as a reason why they did not make use of the school library. Learner B4 said: "I do not go there because there is no one there" and learner B9 said: "There is no library because there is no person." It is encouraging to know that all the learners expressed a need for a functional school library. This need implies they are aware of the potential role the school library could play in assisting them to locate the information they need.

The type of information learners looked for is in line with what one would expect prospective students to be looking for, although it appears to be on an elementary level. These elementary information-seeking strategies were observed at all schools and are discussed in Section 5.4.3. In summary, the learners were seeking information on the following range of topics:

Study environment:

- i. What support is available when studying?
- ii. What accommodation is available?

Information sources:

- i. Which businesses should be approached to learn more about my career choice and what are the opportunities?
- ii. Who can be approached for career guidance and study choices?

Career-related:

- i. What type of qualifications or career options are there for blind and visually impaired people to pursue?
- ii. What is the nature of the job?
- iii. Is the career suitable for a blind and visually impaired person?

- iv. Will he/she be comfortable in doing this type of job?
- v. What are the career options for people with specific qualifications?

Study-related:

- i. What subjects are required for the qualification?
- ii. How long does it take to study for the qualification?
- iii. What are the registration and admission requirements to study at the University?

These learners also searched for information to assess whether their choice of career would be suitable for a person with visual disabilities. They were, therefore, aware of their disability and sufficiently realistic to clarify these concerns. The type of questions they had was uncomplicated and of such a nature that a career counsellor would not only be able to answer directly but also help them to seek additional information. Also, learners mentioned that once they have found specific information required, they did not explore other information sources. The validity or quality of the information found was not tested by consulting additional information sources.

Learners found information and stored it in several ways for future reference. The method mentioned most by these learners was to memorise it. Some indicated that they also made notes where possible or print-outs which they kept on file. Memorising information may not be the best way to store information, especially with so much information to read and verify before enrolling at a tertiary institution. Note-keeping is not as easy as it is for people with sight who can quickly jot down things with pen on paper. For people with visual disabilities, note-taking is more cumbersome. The equivalent of pen and paper for visually impaired people is the slate and stylus, which is one method of taking notes. This method of note-taking is tedious. Because the slate allows the capturing of only a certain number of braille words and lines, it must be moved down a piece of paper to capture more lines of braille text. - for some background on the slate and stylus methods see the Text Box¹ on the next page.

Apart from the slate and stylus, there is a variety of note-taking techniques and devices available to visually impaired people, e.g. braille-writing machines (manual and electronic),

personal digital assistants (e.g. Braille 'n Speak); talking computers, and recording devices including smartphones. There is also the option of memory as indicated by the learners, a common method in the world of blind and visually impaired people. Kendrick (2011) quotes one visually impaired person as describing his note-keeping method: "I use my brain...". The choice of a note-taking device is guided by decisions such as portability, affordability, comfort and cost. Sound recordings, for instance, as a method of note-taking, requires a person to listen to a complete recording to find the information for which they are looking and may, therefore, be very time-consuming. It may also be labour intensive to organise various sound files. All the note-taking options, therefore, have benefits and drawbacks.

Although all six learners who had started the information-seeking process indicated that they were confident in their ability to find the information for which they were looking, five of them indicated that they needed assistance with the interpretation of information. This need is understandable if one keeps in mind that these are visually impaired Grade 12 learners from a rural area. It has nothing to do with their intellectual capabilities to understand information but is related to their limited exposure to the requirements of the tertiary world. Any prospective student would require the assistance of a person to clarify and explain certain steps or requirements. The learners' experience was that people were generally very supportive to assist while one learner found people not supportive when asked for help. Learner B7 indicated that he/she sometimes needs assistance from another person with the formulation of a search strategy or search terminologies. Once guidance is provided on how to formulate the search, the learner then indicated that he/she was able to continue independently with the information-seeking process.

¹ Note-taking with a slate and stylus: A person creates braille dots on a piece of paper with a stylus which has a small handle on the one end and a metal point on the other end. The slate, made of plastic or metal, is used to ensure that the braille dots are punched evenly on a piece of paper. The slate is the width of a normal piece of paper and maybe four or six lines of braille high, i.e. 5 cm. high. It is hinged and opens like a book. Paper is placed between the two parts of the slate and held in position when close. The top part of the slate has openings which are the size and shape of a braille cell, and the bottom part is solid with small indentations for each dot to ensure consistent braille dots on the paper (Cheadle, 2007).

Learners confirmed that if they did not find information on the Internet, they reformulated their question. One of the six learners who had started the information-seeking process indicated that he usually terminates the search if unsuccessful at the first attempt. The cumbersome process to find information was cited as a reason.

The awareness of the learners of external organisations available to assist with information was mixed. At least five of the six learners who had started the information-seeking process were aware of the South African Library for the Blind. Their awareness is mainly due to an Internship School Project the Library has in place where Grade 12 learners visit the library for a week to get exposure to all the different types of work performed by the library. Learners have benefited from this programme in the past and must have shared their experiences with fellow learners. The learners who visited the library in the year before this research was not part of the interviews since they have left the school, having passed Grade 12. A low number, i.e. two out of six learners, were aware of the South African National Council for the Blind and only two were aware of the Disability Units at various Universities. One of the reasons why the structures were not well-known to these learners is because of insufficient communication with prospective clients.

Visual impairment is part of the daily reality of the learners, and they had been living with it for most of their lives. Learners expressed a wish that people with sight world become more sensitive about the challenges faced by visually impaired people. Learner B2 said: "...people are unaware of our challenges." This sentiment was echoed by learner B4: "It takes me longer to do certain things, and some people are sometimes impatient with that." The rest of the learners could not add much to the conversation about anything additional from their background that assisted or prevented them from finding information. One of the low vision learners mentioned that the backlighting of the computer contributes to eye fatigue which has a limiting effect when using the computer. If one cannot use a computer long enough, it may affect the information-seeking process which has to be interrupted and resumed at another time, making the process longer and intermittent, leading to possible duplication of actions.

Lastly, the learners provided several suggestions of how to make the information more accessible to them: suitable format of the information, i.e. braille and large print, accessible

assistive technologies with appropriate software, the need to have access to a functional library with relevant resources and a librarian or a person to assist with finding information.

Section 6 findings: Learners who have not decided yet

Two learners indicated that they have not yet decided what to do after completing Grade 12. The reasons provided by the two learners for not deciding about their plans after Grade 12 are unusual. Funding for tertiary studies is at the time of this research, a major national issue in the South African discourse. The arrangements made by the South African Government and tertiary institutions for free education should, therefore, give the learner who is concerned about funding the assurance that the matter is not insurmountable. The second learner's concern may be based on a lack of information and efforts to address the issue about which career would be more suitable for a visually disabled person. The fact that he could also not relate his interest to a possible career choice is an indication that he had not actively engaged with people or information sources to find possible solutions. It can be assumed that the learner who spoke to his mother had a general conversation about career options and related challenges or opportunities.

Learner B1 confirmed access to appropriate assistive technologies as a challenge since he owned a cell phone which is not a smartphone. In a rural area where access to appropriate technologies may be limited, access to a smartphone that can connect to the Internet may be the only method of accessing information. Learner B2 confirmed the challenges he experienced as a person with low vision. Font size is crucial, and even if the information is available, but it does not accommodate people with low vision, the information is rendered inaccessible and therefore useless.

5.3.2.3 Findings at School C

Characteristics of the sample

School C is in a rural area. All four learners registered for Grade 12 were interviewed. Three learners were female, and one male. All learners were 17 years of age. All four learners described their visual status as "low vision." Two learners have lived with low vision since birth, while the other two learners have lived with visual impairment for the past five and ten

years, respectively. All four learners prefer large print and in a font size of 16 or higher. Learner C2 mentioned that he could read standard print, “but it just takes me longer”. Learner C4 mentioned the importance of “good light” to ease the reading of large print.

Section 2 findings: Access to technology

The school has a computer lab where all learners, including the four participants, receive computer science training. One learner has access to a computer at home. Computers are also available in the school library. The learners had more freedom to use the computers in the Lab than those in the Library. Although access to computers was not a problem, access to the World Wide Web was since the school restricted most websites. A few websites were available only to support school-related projects. Explaining this situation, learner C2 said: "At the computer lab I can download information myself although access to websites is restricted. At the library, we can ask the librarian to do it, but then you pay for each page of information you want to print." Learner C3 elaborated on the point of access control applied by the school by saying: “At school, we are not allowed to be on the Internet without reason. We are only allowed to use the Internet for school work and must tell the teacher what it is we are looking for."

All four learners had a smartphone which they used for information-seeking. Only one learner had a preference to use a computer for information-seeking the other three had no preference. All the learners identified limited data as a barrier to using their phone because of high data costs.

Given the comment above by learner C3 about Internet restrictions at school, it is not surprising that all four learners indicated that they use information technology most frequently to seek school-related information only. The learners found a way around the restrictions to go onto social media on the school computers, but in a “rogue manner” as mentioned by learner C1. Using the Internet daily, none of them needed assistance to use the Internet. They were not afraid to try and work things out for themselves or amongst themselves. As mentioned by learner C2: “We try different options until we worked it out or you just ask your friend next to you.” Perhaps because of this method, three of the learners

indicated that they did not find webpages inaccessible. Learner C3 mentioned that it is "sometimes" inaccessible because "I do not know where to click or where to enter the page."

Section 3 findings: Information-seeking behaviour (general)

All four learners interviewed indicated that they were considering tertiary studies after completing Grade 12. Section 5 relevant for learners considering work options and Section 6 relevant for learners who were still undecided are therefore not reported here.

Section 4 findings: Information-seeking behaviour (study focus)

All four learners had already initiated the information-seeking process. All four mentioned that they had "an idea" what they wished to study but that they still needed plenty of information to guide them. The four learners of this school were using a wide variety of information sources, and all of them mentioned the following methods:

- i. talking to teachers, parents, family and friends,
- ii. using the school library and
- iii. using the Internet.

Talking to friends about study options was regarded by three learners as the most helpful resource. The fourth learner who preferred the Internet justified this choice, saying: "Google is more accurate." All four indicated that they had found information at the time of the interview, but learner C2 mentioned that "I do not always find everything that is available or what I need."

The topics sought by the learners in their information searches for information about future career plans are summarised below:

- i. The scope and requirements of a particular qualification.
- ii. The match between personality type and choice of career.
- iii. Types of subjects applicable to a study programme.
- iv. The duration of study for a particular qualification.
- v. The institutions offering a particular qualification.
- vi. Time of start of teaching programmes at the Tertiary Institution of their choice.

- vii. Application procedures.
- viii. Availability of bursaries.
- ix. Availability of university accommodation.
- x. Are all courses of interest offered in a single institution?

Once the learners had found information, two of them made print-outs and put them in a file system of their own. Two other learners indicated that they memorised the information they thought of as important such as deadlines and contact persons.

Learner C1 indicated that he “sometimes” required assistance with the interpretation of the information found. He found people generally supportive when asked for assistance “but it depends on their availability or what they are busy with.” The three others did not need assistance. Learner C3 said in this regard: “I make my conclusions from what I find.”

Only one learner indicated that she was aware of the South African Library for the Blind as a possible information resource to approach during information-seeking. Apart from this exception, the learners could not mention any other organisations to approach for relevant information.

The learners mentioned two matters from their background or environment that prevented or assisted them in their information-seeking process. One barrier was their inability to pay for data. Another was illegibility of text, noting that the “availability of Magnifier to see text more easily is helping”. (Magnifier is a screen magnifier app which is part of Microsoft Windows. It can magnify what is on a PC screen nine times and higher. It is intended for visually impaired people.)

In cases where the learners did not find the information they were looking for all four indicated that they did not terminate the seeking process but tried other options. One learner indicated that he usually reformulated the search query. Learner C2 said “I ask someone to assist me.” Learner C4 said: “I leave it until tomorrow and then try again.” All four learners indicated that they were confident with their information-seeking process to find the information they were seeking.

The learners made suggestions to make information more accessible to them. The suggestions centred on font size and background colours on web sites. Learner C3 recommended the use of Arial font because “other fonts are difficult to read”. Learner C4 recommended that text should be in bold for better contrast.

Since all four learners had decided to pursue tertiary studies after Grade 12, there was nothing to report from Section 5 (those who considering to find work) and Section 6 (those who have not yet made a decision).

5.3.2.4 Findings at School D

Characteristics of the sample

School D is in an urban area. Nine learners registered for Grade 12 were interviewed, of which five were female and four male. All learners were 17 years of age. Eight learners described their visual impairment as “low vision”, and one was blind. Eight of the learners had lived with visual impairment since birth and one since the age of ten. The blind learner preferred braille and audio as a reading format. The rest of the learners’ preferred large print, and one of these learners also indicated an additional preference for braille.

Section 2 findings: Access to technology

All nine learners had access only to computers at the school. They all had a smartphone which they used for information-seeking. Eight of the learners preferred to use their phone when accessing the Internet, and one preferred a computer. Three learners indicated that they access the Internet most frequently for school projects. The rest of the learners accessed the Internet to satisfy general interest topics. Learner D2 said: “I really check anything on the Internet” and learner D4 was more specific by saying: “I like to read about celebrations, news about singers and soccer players and watching videos.” Learners D1 and D9 mentioned seeking career information “and information about what is happening around me.” Five of the nine learners accessed the Internet daily, and the rest a couple of times per week.

Four of the nine learners indicated that they “sometimes” needed assistance from other people when using the Internet. Of the five, who indicated that they did not need assistance from other people, learner D4 was very clear that she did not need assistance “at all.”

Five of the nine learners found websites to be accessible. The other learners mentioned that they were not or occasionally not accessible. The main reason mentioned was that fonts that were too small.

Section 3 findings: Information-seeking behaviour (general)

Eight of the nine learners interviewed indicated that they were considering tertiary studies after completing Grade 12. One learner was still undecided. The reason for this is discussed in Section 6 below.

Section 4 findings: Information-seeking behaviour (study focus)

Eight of the nine learners indicated that they are considering tertiary studies after completing Grade 12. One learner had not decided yet; reasons for this are discussed in Section 6 below.

Eight of the learners intending to pursue tertiary studies had started to seek information related to their interest. The learners used a variety of information sources such as teachers (two), a friend (four) and parents (one). One learner mentioned going to the University to find information. The learners mentioned no other additional sources of information. The most popular source of information was the Internet with all eight indicating this option as their preference. The motivation by learner D2 echoes what was said by the others: "I prefer the Internet because there is enough information about studies and career choices available there."

Seven of the eight learners had already found information. Learner D5 indicated that he had not found anything yet because he had just recently started the information-seeking process. Learner D3 indicated challenges to interpret the information by saying "The information is not always straight and understandable."

The types of information the learners were seeking concerning their future studies are summarised below:

- i. The suitability of the career choice to their personality.
- ii. The academic scores required to qualify to register.

- iii. The requirements of the study.
- iv. The offerings of different Universities.
- v. Bursary and accommodation options.
- vi. The job opportunities after completing the qualification.

Once the learners had found applicable information, six of them indicated that they made notes and two made print-outs which they kept in a personal file. All eight learners indicated that they needed the assistance of someone with the application or interpretation of the information they had found. In most cases, it was to confirm that they had correctly understood the information. Seven learners mentioned that the people they asked for assistance were usually very supportive. Learner D1 indicated that people were “advising me to go out and research more” and learner D2 said: “They help me to find more information and give me forms to apply to those institutions.” Learner D3 found people less supportive and said: “They are sometimes busy and can only help you later.”

Not one of the eight learners was aware of or mentioned any other external organisation to assist them in the information-seeking process. The researcher proposed the names of the South African Library for the Blind and the South African National Council for the Blind. However, the learners were not aware of these two or any other organisations.

The learners identified two matters from their background affecting their information-seeking behaviour. The one is that the school did not allow enough time for them to do information-seeking and secondly the high cost of data to do information-seeking on their phone. The spirit of learner D3 should be acknowledged when she said: “No-one prevents me from following my dreams.”

When the learners did not find the information they were seeking or were struggling to find information, most of them tried different options. Learner D3 said that she started from “scratch”. Learner D4 said: “I keep searching with other means or find something else that would suit me.” All learners would ask other people like friends, teachers or family members to assist when they struggled to find information.

Except for one learner who indicated that she was sometimes not too sure about the information-seeking process, the seven other learners were confident that they would find the information they were seeking.

The learners made the following suggestion to improve the accessibility of information. Learner D1 wanted information about Universities in large print or audio “explaining everything”. Two learners required more data to be able to use the Internet more often. Learner D3 expressed a need to have a "clear understanding of the Internet because it is sometimes confusing when I browse." Two learners mentioned that they would like to talk to more people, e.g. current students who were studying what the learners are considering to study.

Section 6 findings: Learners who have not decided yet

One of the nine learners interviewed at school D had not decided what to do after passing Grade 12. The main reason she offered is: “I am not sure what I would like to study.” She sought guidance from teachers “briefly”, parents and browsed the Internet on this topic. The learner could not provide anything from past information-seeking experiences to add specificity to the interview.

5.3.2.5 Findings at School E

Characteristics of the sample

School E is in a rural area. Seven learners registered for Grade 12 were interviewed. Five learners were female, and two male. All learners were 17 years of age. Six learners described their visual status as “low vision”, and one was blind. Three of the learners had lived with their visual impairment since birth, and three of them had lived with the impairment since four, six and ten years of age. One learner is living with low vision for the past year. Three learners preferred to read in large print format only, while three other learners preferred audio and braille and one learner preferred braille only.

Section 2 findings: Access to technology

All seven learners interviewed had access to computers at the school only. All seven learners had a smartphone which they used for information-seeking. Five of the seven learners preferred using the phone for information-seeking. Learner E1 provided the following reason for preferring to use the phone: "I can spend more time on the phone than on the PC in the class." Another reason mentioned by some of the learners preferring to use their phones is that the Wi-Fi at school was very slow and therefore frustrating the information-seeking process. Learner E7 prefers to use the computer "...because the screen is larger."

All seven learners sought school-related information. Information-seeking for personal or other reasons were not raised. Two of the learners used the Internet daily. Two other learners access the Internet a couple of times per week. The reason, according to learner E2 was "due to limited data and the limited time allowed at school – we only have one class a week where we can access the computers or during break time." The three remaining learners used the Internet a couple of times per month only for their school projects.

The learners did not need assistance when using the Internet, but they did need assistance with the computer and software to access the Internet, e.g. JAWS. Learner E3 mentioned that she was happy to use the phone but "need some help with the computer because I am not that good on the computer." Learner E4 indicated that he needed assistance with JAWS "because it jumps to different links on the screen, and it is difficult to go back to the previous link."

Five of the seven learners indicated that they found webpages accessible. The two other learners qualified their response by stating that "some webpages" are inaccessible. Advertisements on webpages create a barrier when using screen reading software.

Section 3 findings: Information-seeking behaviour (general)

All seven learners interviewed indicated that they are considering tertiary studies after completing Grade 12. Two learners indicated that they have not yet started with the information-seeking process. The reason for this is addressed in Section 4 below.

Section 4 findings: Information-seeking behaviour (study focus)

All seven learners had decided to study at a tertiary institution after completing Grade 12. Two of the learners had not started the information-seeking process in this regard. The reasons will be discussed at the end of Section 4.

The five learners who had already initiated the information-seeking process used the Internet most frequently. Three learners approached family members, and two discussed career options with teachers. All five of the learners found the information they were seeking. Learner E3 said: "I generally find something but continue if it is not exactly what I am looking for." Learner E7 mentioned struggling to find information sometimes "because of the format or the webpage layout."

The types of information the learners sought about their future studies are summarised below:

- i. Does the institution cater for blind and visually impaired people?
- ii. Nature of the course content.
- iii. How is discipline maintained at University?
- iv. What safety arrangements are in place at the University?
- v. What are the fees?
- vi. What accommodation options are available?

Once the learners had found information, two indicated that they made print-outs and filed them, while two others made notes and collected brochures which they also kept on file. One student saved information on a USB memory stick.

Four of the five learners required assistance with the application of the information they had found. Learner E3 indicated that she "needs assistance because some information is confusing." Learner E6 mentioned something similar by stating that "sometimes I don't understand what I read. I then check other websites to verify and also ask people to assist." One learner did not require any assistance.

Two learners indicated that they found people to be generally supportive when asked to assist. Two other learners found people somewhat supportive because people did not always

respond immediately to their request for assistance. Learner E6 said: “I prefer to do things on my own because people sometimes delay things.” Learner E7 made a similar comment. Learner E4 experienced people at home mostly as unsupportive and said: “People always say I must check with them later or they don’t want to help me.”

Knowledge of organisations available to assist blind people to obtain information was limited. One learner had heard of the South African Library for the Blind and two other learners had heard of the South African National Council for the Blind.

In terms of issues experienced during previous information-seeking experiences and what assisted them to find information or what prevented them from finding the information, the following three main issues were raised. Three learners mentioned challenges with JAWS, the screen reading software, saying that it did not always work which frustrated the information-seeking process. Two learners mentioned slow Wi-Fi and expensive data as barriers.

The learners responded differently to the question about what they did when they did not find information or were not satisfied with what they had found. Three learners indicated that they usually “rephrased” their question or “check the words to confirm it is correctly spelled” or use “different terms to see what comes up.” Learner E7 indicated that she “leave it until tomorrow, talk to people and then try again.” Learner E3 just terminated the information-seeking process all together: “Sometimes I just drop it and give up hope after trying four, five times.” She spoke about considering asking the assistance of teachers but mentioned that they were usually too busy and “I therefore don’t bother them.”

All five learners were confident of finding the information they were looking for. Learner E3 added a qualification to this by saying: “It depends what information I search for – sometimes it is easy but sometimes I can’t find anything.”

The learners made the following suggestions to make information more accessible to them.

- i. To have a library in town with braille books and computers to do searches especially when they did not have data
- ii. Universities should have career information available in braille or audio which could be sent to learners.

- iii. ZoomText (screen text and image enlargement software for people with low vision) navigation should be made easier. The software is not always responsive enough.

As mentioned at the beginning of this Section, two learners confirmed that they were considering entering a tertiary institution after Grade 12. They had not started with their information-seeking process at the time of the interviews which took place in the second month of their Grade 12 year. The reason put forward by learner E1 was that she was waiting for her Grade 11 results and that school work kept her very busy. The second learner (E2) mentioned that he had “many other responsibilities at school and at home.”

The two learners did not anticipate many challenges in finding the information once they were able to give it attention. One learner was concerned that people might be too busy to assist when requested. She was also concerned that because there were so many applicants requesting information that it might be difficult to obtain a response from the University.

The two learners made the following two suggestions to make information more accessible to them:

- i. The school should have a library to assist them finding career related information and other types of information.
- ii. The school should allow more time to Grade 12 learners to seek career related information.

5.4. Consolidation of Findings and Recommendations

In this Section the findings of the five schools (the responses of 43 learners) are consolidated per Section as structured in the research instrument. This is done for two reasons. The first reason is to get an integrated understanding of the five sets of findings and to understand the similarities, differences, and exceptions where applicable. The second reason is to provide a consolidated reference point to use during the Gap Analysis that is addressed in Chapter 6, Section 6.4, i.e. the gap between the conceptual framework and the empirical findings. Where useful, relevant literature confirming the findings are drawn in the consolidation Sections presented below, thus strengthening conclusions. Equally, disconfirmatory evidence was

sought in an attempt to guard against bias. Recommendations are provided where applicable in each of the sub sections below.

As mentioned in Chapter 4, Section 4.5.4.1, the research instrument was divided into six Sections. Section 5, which provides for learners who consider starting to work after completing Grade 12, was not used as not one of the 43 learners interviewed considered this option. Only four learners indicated that they had not yet made up their mind about what they would do after Grade 12. Thirty-nine learners out of the 43 interviewed therefore indicated their intention to continue with tertiary studies and had started to seek information. Five learners out of the 39 who were planning tertiary studies after Grade 12 had not yet started the information-seeking process. The reasons for this were reported in the Section 4 discussions above.

5.4.1 Age, Nature of Visual Impairment and Reading Formats

All 43 learners interviewed were 17 years of age. Thirty-two of the 43 learners had low vision and eleven were totally blind. This distinction had no influence on the information-seeking process since none of the learners could read normal print. All 43 learners could therefore be described as people:

“with a visual impairment or a perceptual or reading disability which cannot be improved to give visual function substantially equivalent to that of a person who has no such impairment or disability and so is unable to read printed works to substantially the same degree as a person without an impairment or disability” (World Intellectual Property Organisation, 2013(b)).

All learners had lived with visual impairment for most of their lives and had adjusted their lives accordingly - including their information-seeking behaviour. There was acknowledgment that information-seeking for them was a difficult and slow process especially if assistive devices and accessible resources were lacking or inaccessible. Kerscher and Fruchterman (2002) make the point that electronic books are not always freely available to people using adaptive technologies because of encryption technologies used by publishers to protect their publications. The visually impaired person therefore must find alternative ways to access the

information. The quote from a visually impaired student interviewed by Boman (2006:62) confirms the fact that information-seeking is a slow process for them: “I think one of the hardest things is getting through the material as quickly as sighted students do. Screen readers are good, but I know that sighted students are able to skim material with greater ease.” This finding from the literature is echoed by learner E4 who, sharing his frustration with JAWS (screen-reading software), said that it “jumps to different links on the screen and it is difficult to go back to the previous link. If you want to go back you must start a new search.” In addition, reading information in braille is also a slow and tiring process because it is a physical activity (Khochen-Bagshaw, 2011). Because most of the learners (32 of the 43) interviewed had low vision, their reading format preference was material in large print with a font size of 18 points or higher. The braille format was preferred by ten learners and three learners preferred the electronic format. It is noteworthy that six of the 43 learners interviewed mentioned audio as a preferred format. This may be since no curriculum-based material is made available in audio format. In addition, human narrated audio production is a slow and expensive activity and the classroom facilities are not geared for audio books. This is the case even though material is produced in the DAISY format which is internationally acknowledged as a highly accessible and navigable way to read audio books (Verma, 2016).

5.4.2 Access to Information Technology and Information-Seeking Topics and Behaviour

The combined results of the five schools for this Section of questions are presented in Table 5.2:

Table 5.2: Access to and use of information technology (combined responses)

Interview question topics	Number of learners
1. Access to computers at school	43/43
2. Access to computers outside school (computer and tablet)	5/43

Interview question topics	Number of learners
3. Access to private cell phone	43/43
4. Internet access via cell phone	39/43
5. Internet access via computer at school	43/43
6. Use of social media	9/43
7. Daily use of the Internet	18/43
8. Requiring assistance when using the Internet	17/43
9. Satisfied with the accessibility of web pages	23/43

General comments on selected interview question topics referred to in Table 5.2 follow:

Topic 2: Lack of access to computers at home– during school term – had little effect on the subject under investigation since most of the learners lived in school residences. All the learners had access to a computer and the Internet at school although different schools had different rules about access. In all cases, the use of the computer lab at school had to be arranged with the teacher beforehand.

Topic 4: Thirty-nine of the 43 learners interviewed used their phone to access the internet. The frequency and duration of Internet access on the phone was determined by the availability of data. Learners from each of the five schools raised the lack of data due to high costs. The high number of learners preferring their phone as a search instrument is mainly based on the fact that they feel they are in control of it and can use it whenever they want. Time to do information-seeking is limited and their personal phone allows them more

information-seeking time. To repeat the quote of learner E1 mentioned earlier: “I can spend more time on the phone than on the PC in the class.”

Topic 5: Noting the above comment it is therefore not surprising that all 43 learners preferred to use the computer at school to seek information because access to the Internet at school was free. The fact that most of the learners had low vision made it easier for them to read text on a computer screen rather than a cell phone screen. It is also easier for a visually impaired person to work on a PC than a cell phone because of the size of the keyboard and screen. This was confirmed by learner E7 who explained her preference for a computer thus: “because the screen is bigger.” Following the instructions of the screen reader is also easier on a PC than a phone because of audio quality.

The focus of information-seeking for most (36) Grade 12 learners interviewed was for school-related topics, i.e. mostly for assignments. An interesting difference is noted in the response to the question about using the Internet for personal or general interest information-seeking. Twenty-nine learners in total indicated that they used the Internet for personal or general interest purposes. There may be several reasons why the learners from the five schools were less interested in using the internet for general purposes. Some of the reasons mentioned by the learners were the limited time allowed by the schools to use the computers (learner E2), no data on personal cell phones due to high costs (learner A3), challenges with screen reading software (learner E3) and slow Wi-Fi (learner E7).

Topic 6: The use of social media was low. Only nine out of the 43 learners indicated that they used social media regularly, Facebook being the most frequently used. Possible reasons for this low usage have already been mentioned such as data cost, small keyboards, small screens and font challenges.

Topic 7 and 8: The daily use of the internet appears to be low (17 of 43 learners). The fact that 21 of the 43 learners required assistance when using the Internet may be an indication why daily interaction with the Internet is low. Its low usage can probably be ascribed to the difficulty in seeking personal assistance with the Internet.

Topic 9: A salient finding is that many of the learners (20 of 43) regarded the web pages they had worked with as accessible. This is an encouraging finding since the needs of visually

impaired people are not always considered during website design many of which lack accessibility features. The main reasons for inaccessible websites mentioned by the learners were that font sizes were too small and could not be adjusted, no screen contrast settings and web pages that were not customised for cell phones. These limitations therefore affected the information-seeking behaviour of the visually impaired learners when using the Internet.

To improve access to and use of information technology and other resources the following recommendations were made by the learners. The viability and resource implications of each proposal were not considered in this study.

- i. The learners made general recommendations to address accessibility of websites, e.g. the facility to include text enlargement, use of contrast to improve readability and software to assist them when interacting with websites. JAWS or similar software should be available on all computers to facilitate screen reading.
- ii. Too many links and advertisements on websites should be reduced because they complicate the use of the site when using a screen reading software. It is confusing and delays the information-seeking process.
- iii. Websites should be regularly updated.
- iv. More information should be available in braille and audio to facilitate their reading or listening to information at their own pace.
- v. Generally, it was recommended that the school should allow more time and opportunities for learners to engage with people in the career field and for them to search for study related information. This suggestion is reasonable given that the search activity for visually impaired learners is a slow, uncertain process.
- vi. The call for the school library to be available and open is vital. A fully functional school library with a full-time librarian, up to date information resources, Internet connectivity and access to other electronic databases would serve as a powerful aid for learners struggling to formulate search strategies; interacting with various information resources and being able to talk to the librarian to assist them when required during any stage of the information-seeking process.

- vii. The need to be able to talk to someone during the search activity was also suggested by one of the learners.
- viii. The cost of data should be lower to make it possible to use the Internet more frequently and for longer periods since the information-seeking process is slow.
- ix. Receiving more guidance and training on how to use the Internet and the software to access the Internet. It will make the understanding and navigation of the Internet easier.

5.4.3 General Information-seeking Behaviour

Most of the learners (39 of the 43) had decided to pursue a tertiary qualification after Grade 12. These learners came across as focussed and determined to obtain their qualification and to improve their lives. Learner D2 made this very clear by saying: "I don't want to suffer after Matriculation and therefore need a good qualification and I want to complete the course I want to study." Because visual disability is their reality, they did not see it as a reason why they could not pursue their tertiary studies. The spirit of the learners is captured by the statement made by learner D3: "No-one prevents me to follow my dreams."

A general observation is that some of the learners may still need guidance to refine their information-seeking strategies. They gave generalised information search queries as examples as mentioned in the summary of the responses to question 4.7 mentioned earlier in this chapter (see the discussion of Section 4 of the interview instrument for the five schools earlier). This reflected a very simplistic view of the scope and nature of the information that they should try and obtain to prepare better for the qualification for which they wanted to register, its registration requirements and general information about student life. For example, the response provided by the learners about the nature of the information they had sought with regards to their tertiary studies was limited to a few words or one or two topics. When prompted to expand on their response or to determine if there was anything more they would like to add, the learners indicated that is all they could say. Their responses indicated a need for more guidance on a systematic information-seeking strategy as well as a knowledgeable person to assist them continuously. The lack of information literacy in this regard was clear.

Some learners had an interest in a certain subject field but were uncertain how to articulate the information query when seeking information. This might lead to their failing to find information about their intended area of study possibly leading to poor choices or to abandoning their dream. Although it might be possible for these learners to find the information on the Internet and various other sources, this might lead to information overload and confusion.

Only four learners out of 43 had not made up their minds about their future options. The reasons were mainly insecurity about study options available to them and uncertainty about how the financing of the studies would work. Two learners had made a choice to study further but had not started the information-seeking process. Five learners had made a decision to pursue tertiary studies but had not initiated the information-seeking process. Two learners mentioned their low vision status which was affecting their ability to seek information. A third learner was waiting for the Grade 11 results to know whether she was in Grade 12 before beginning to consider career options. A fourth learner (E2) indicated that he had “many other responsibilities at school and at home.” The fifth learner (A14) could not provide a reason for the delay. From the interviews it was noted that those learners who attended a career expo benefited greatly from it. The fact that they were exposed to several options at a career expo and could directly communicate with a person from the institution were the likely reasons why the learners found the career events a good source of career information.

5.4.4 Information-Seeking Behaviour

Thirty-four of the 43 learners who indicated that they planned to pursue tertiary studies had already started their information-seeking activities. Twenty-one learners approached friends, parents or family members as information sources. The reason that parents, friends, and other adults were such a popular source of information is probably that it is easier to get information or guidance by talking to someone than to struggle with inaccessible technologies and information sources. This point is confirmed by the statement of learner D1 commenting on approaching friends or other people for information: “because they explain everything.” Learner B5 said something similar: “I would like to have people around to assist to find information and to explain information if required”. These statements are consistent with research indicating that visually impaired people depend more on interpersonal sources than

media and institutional sources (Williamson, Schauder and Bow, 2000,). The role of family and friends has also been raised by various other researchers such as Williamson (1998) and Dörk, Carpendale and Williamson (2011).

When asked which information source helped them the most, the majority (23) of the learners who had started the information-seeking process, mentioned the Internet. From this response one can infer that the learners realised that although talking to people is easier, the quality, scope, accuracy or detail of the information may not always be helpful. This is confirmed by learner D6 who said: "The Internet has enough information about studies." Learners D7 and D8 referred to the benefit of the Internet as having a "lot of information" and the "most information."

It is noteworthy that learners did not make use much or think much of their teachers as information sources. Of the 34 learners who had initiated the information-seeking process, 17 learners approached their teachers. Only four learners of the 17 mentioned the teacher as a preferred information source. One would have expected the number to be higher since they were in contact with teachers daily. The main reason for not approaching teachers more frequently was their accessibility – the teachers were perceived to be too busy. Learner E4 said: "Teachers are available but they are busy with exam papers and I therefore do not bother them."

Another finding of concern is the fact that neither the school library nor any other library featured highly as an information source for these learners. Only one (School C) of the five schools participating in the empirical research of this study, has a fully functional and resourced school library with a full time librarian in charge. It is therefore not surprising that the only learners who indicated that they had used the school library as part of their information-seeking process were all from School C. On the positive side, learners participating in this research were not ignorant of the potential value of a functional library since most of the learners mentioned their desire to have access to a functional school library. This was confirmed by learners A10, B4, B6 and E3 as one of their suggestions to make information more accessible. They suggested having a school library "that is open with information sources and a teacher available." Learner E3 broadened the suggestion by suggesting that they should "have a library in town with braille books and computers to do

searches if you don't have data." It is interesting to note that this finding is in part contrary to the findings of research indicating that information-seeking behaviour of visually impaired people is influenced by ignorance of information services available (Davies, Wisdom & Creaser, 2001, Zahra, 1994). The learners interviewed were not ignorant about the potential value of the library as an information source. They might be ignorant about how to formulate information-seeking strategies to find the information they are seeking. They might also have a limited understanding of the variety of potential information sources available to them to use but it cannot be said that they were ignorant of the role of the library.

The learners were satisfied with the information they had found at the time the interviews were conducted which was in the second month of the Grade 12 academic year. The learners indicated that the information they had found was addressing their information need about their planned tertiary studies but it was clear that some of them still required additional information. Thirty of the learners indicated that they were confident in their ability to find information. Five learners (not part of the 30 mentioned above) indicated that it was useful to have somebody assist them. Two others mentioned that it depended on the type of information they were looking for "sometimes it is easy but sometimes I can't find anything." (Learner E3)

Of the 43 learners interviewed 34 initiated the information-seeking process. Thirty of these 34 learners indicated that they were successful in finding the information. This may suggest their level of confidence in their information-seeking abilities. An additional indication of the information-seeking confidence of the learners is that 26 of the 34 learners indicated that they would rephrase their search terminology and query if they did not find exactly what they were looking for. Only one learner indicated that he would terminate the information-seeking process. Despite this confidence, it was evident from the responses of the learners that they struggled to formulate a search strategy that would address their information need. The research by Schiff (2009) about teaching Information Literacy Skills to eight students enrolled at the City University of New York using assistive technology to access the resources of the college library confirms this challenge - she observed during practical information-seeking exercises that visually impaired students encountered conceptual difficulties in narrowing down a topic. The presence of a librarian in this case may have solved this problem as well as with the assurance of the quality of the information. This was confirmed by 23 learners who

indicated that they needed assistance when using the Internet. Eleven of these learners qualified this by saying that they only “sometimes” required assistance from other people. The assistance required appeared to be more with the use of the screen reading or magnifying software than with the actual information-seeking activity. What appeared to be a bigger challenge was how to understand or what to do with the information the learners had found. Twenty-eight learners indicated that they required assistance with the interpretation of the information. It therefore appears that the presence of a knowledgeable person to assist with the information-seeking process and with the interpretation of the information would have been of help to these learners.

Twenty-five learners found people to be supportive when asked to assist with the information-seeking process while only three learners indicated that people were not very supportive. It appears that people were not totally unsupportive but just not available at the moment that assistance was requested. This delay in assisting was regarded by the learners as frustrating and uncooperative. The fact that most of the learners indicated that they needed assistance with information-seeking from time to time is a factor not recognised in the information-seeking research by Kuhlthau (1991), Moore (2000) and Wilson (1999). The relationship between confidence levels of students in their studies and the level of support that they had received from friends and family is confirmed by the research of Boman (2006:77) and Roy, Dimigen & Taylor (1998:425). It is therefore suggested that learners with a strong support network of teachers, friends and family will be more confident about making decisions regarding the study options than those with no or little social support.

The learners had an information filing system in place to refer to when they wanted to confirm something without having to repeat the whole information-seeking process. Fifteen learners who had found information, filed the print-outs. If they struggled to read the print-outs they would ask someone to read it to them. Seven learners made their own notes and filed them. One learner saved it electronically and another saved it on his phone and six learners memorised the information they required. Memory as a tool is also mentioned by Kendrick (2011).

Awareness of organisations to assist blind and visually impaired people with information-seeking and resources was very low. Only ten of the 43 learners interviewed were aware of

the South African Library for the Blind. This is mainly due to a school program initiated by the Library to host Grade 12 learners at the Library for a week to give them exposure to and experience in all the functions performed by the Library. The limited awareness of the Library by the learners may also be due to the fact that only one of the five schools had a fully functional and operational school library. Even fewer learners (eight) were aware of the South African National Council for the Blind (SANCB). The SANCB is an umbrella organisation of all the organisations and schools serving the needs of blind and visually impaired people of South Africa and renders many support services to their member organisations and to individuals. Only eight learners were aware of the Disability Units at Universities. These Units render support services to blind and visually impaired students at a particular University. Even after prompting, the learners could not mention any other organisations such as BlindSA (an organisation rendering various support services to blind and visually impaired people) or the National Department of Women, Youth and People with Disabilities or individuals to approach when seeking information.

External factors influencing the information-seeking process for the learners were: the cost of purchasing data to access the Internet, cell phone screens that are too small, uncertainty about how to formulate search strategies, the back-light of electronic devices which puts a strain on their eyes therefore limiting the amount of time to engage in the information-seeking activities and unsafe neighbourhoods limiting freedom of movement to access public facilities such as a library.

5.4.5 Learners Who Had Not Yet Decided

Four learners of the 43 interviewed indicated that they had not yet made up their minds about what to do after Grade 12. Three reasons were provided for this, i.e. uncertainty about what to study, lack of funding, struggling to find a career in line with their interest and a lack of awareness about career options. The uncertainties of these four learners arose from their inexperience of how to formulate a search question because they could not give the researcher an example of the type of information they would be seeking. They displayed a sense of personal insecurity hence they had not approached any other person purposefully to get direction in this regard. The availability of a career counsellor or knowledgeable adult might have been able to guide these four learners to mitigate these obstacles.

5.4.6 Recommendations

As people living with a visual disability for most of their lives, the learners made several practical suggestions on how to improve information accessibility. The suggestions may not be new but confirm that information providers are still struggling to incorporate basic accessibility features in their products and services.

On a technical level, the suggestions were about text enlargement features as well as the colour contrast settings of the website – these should be a universal design feature. Website developers should also consider reducing the number of links on a site since this sometimes creates a problem for screen readers in terms of navigation on the page. The number of advertisements on a site should also be reduced because this busyness was found to be distracting. Websites should also be updated more regularly. For the blind and visually impaired learners, screen-reading software should be available.

On a functional level the learners also suggested that the school should allow more time for them to search for career related information and to create more opportunities for them to engage with people knowledgeable in their chosen field. The need for a functional school library with a librarian as well as reading material in braille and audio as well as career related information sources to assist was emphatic. The learners also suggested cheaper data rates to enable them to access the Internet more frequently. It is interesting that not one learner suggested that data should be free. It was also proposed that they receive training to get a “clear understanding of the Internet.” (Learner D3).

Based on the analysis of the data the following recommendations are made by the researcher to enhance the information-seeking behaviour of the Grade 12 learners:

- i. Marketing: It is recommended that the South African Library for the Blind and the South African National Council for the Blind develop more and innovative marketing strategies to raise awareness about their role and function to learners enrolled at the various schools for the blind in South Africa. Personal visits to these schools to address the learners may be one strategy; another may be through the provisioning of information in a consolidated and accessible format for distribution to these schools.

- ii. Accessible information sources: Drawing on the research by Cox (2008) in County Durham in the United Kingdom, it is recommended that such organisations cooperate to provide “uncomplicated information unified across all providers, in a range of accessible formats, to keep it up to date, and to utilise pro-active methods to get it to the people.” Respondents in County Durham study noted that they needed to be advised of the existence of useful information provided by such service organisations (Cox, 2008:6, 25). This last point is important to facilitate the information-seeking behaviour of people with visual disabilities. Because they cannot access information sources with ease on their own and therefore may be less aware of various information sources available, it is necessary to inform them about these options. The role of the librarian or a Career Counsellor in this situation is again emphasised.

To assist general information-seeking behaviour, the schools may consider the following:

- i. Professional guidance: The lack of a career counsellor or a knowledgeable adult (teacher or otherwise) has a negative effect on the learners’ preparedness for tertiary studies. It is therefore suggested that the learners from all five schools would greatly benefit from a formal and structured career counselling intervention at the school. Learners need guidance from a qualified or knowledgeable person with whom they can discuss their study options, study focus, subject choices, career opportunities and other related topics. Being able to talk to a knowledgeable person at school, or outside school, about the information they have found or not found will enable them to get more clarity about their choices. It will also assist learners a great deal in terms of what information to find timeously to meet certain deadlines, e.g. registration information, when to pay registration fees or whether they qualify for a certain study field.
- ii. Information sharing opportunities: It is recommended that schools should identify career expos hosted by tertiary institutions or other related organisations or government departments, e.g. Department of Social Development, Higher Education and Training or Basic Education, and to arrange for the learners to attend such events.

- iii. A further recommendation is that schools should arrange for Grade 11 and 12 learners to visit tertiary institutions to engage with relevant professionals to advise them on study and related information. Alternatively, schools could invite people from tertiary institutions and related organisations to the school to address the learners.

In summary, a distillation of the information needs of the learners yields five elements that are crucial to the information-seeking process for blind and visually impaired learners and together provide a useful reference point for the conceptual framework of this study (cf. Chapter 6 in which a the conceptual framework emerging from the analytical processes is formulated). They are:

- i. Available and accessible assistive technologies (access to the Internet, computers with screen-reading software, document readers, magnification/reader software);
- ii. Up-to-date information sources (electronic and print);
- iii. Accessible information sources (braille, audio, large-print, electronic, large print);
- iv. A functional library;
- v. Access to a librarian or qualified person to assist or guide with the information-seeking process and interpretation of information found. In addition to a qualified and competent librarian, visually impaired people also need a person who is aware of their challenges and who responds to their information needs in a discreet and understanding manner.

5.5 Summary

Chapter 5 provided information on the conduct and findings of the empirical research of the study. General observations were provided as well as the specific responses recorded at each of the five schools before consolidating the responses. General observations were provided based on observations made during the interviews. The readiness of the Grade 12 learners for higher education, the challenges they reported as part of their information-seeking activities, the lack of a functional school library were all aspects of these observations. Although the learners were realistic about their disability in terms of the challenges that they

must overcome, they were not discouraged from pursuing a tertiary qualification and finding success in life. While the findings of the five schools were presented separately, the consolidation of results shows many similarities. The urban and rural location of the schools had very little impact on the findings. All findings were consolidated according to the structure of the research instrument.

The research findings of this study confirms that blind and visually impaired learners have information needs like any other person (Cox, 2008; Williamson, 1998; Moore, 2000). Information needs are unique to the individual, and various factors may influence how individuals seek information. In this study, the Grade 12 learners were questioned about their information needs in line with their plans after leaving school.

These findings serve as reference point for the generation of a conceptual framework emerging from the study as proposed in Chapter 6. This in turn serves as input motivating for the proposed Inclusive Information-Seeking Model.

Chapter 6: Inclusive Information-Seeking Model (IISM)

6.1 Purpose of Chapter

In this chapter, an Inclusive Information-Seeking Model (IISM) is proposed, derived from a conceptual framework emerging from the empirical findings and generated with the use of a series of analytical and synthetical procedures. The rationale and approach followed to generate the proposed IISM as it was derived from a testing of the theoretical framework of Kuhlthau (1991), Wilson (1990) and Moore (2000), is outlined. A conceptual framework of the study is presented, based on the information-seeking behaviour and need models proposed by the three major theorists which together served as the theoretical framework for the proposed model, as well as the findings of the empirical study.

The theoretical framework was tested through empirical research. These results are presented as the Seven Gaps. Strategies to address the Seven Gaps are proposed. These strategies generated inputs for the identification and development of the components of the (IISM). Seven information-seeking principles are presented which are derived from the strategies and serve as additional input in the formulation of the IISM. Also, and falling outside these categories, two salient features emerging from the empirical research are presented as essential factors for incorporation in the IISM. Four scaffolding elements, viz. Section 6.6 can be discerned in the conceptual framework which is the intellectual product of the methodological processes described above, viz. Section 6.2.

Two salient features emerged, defined by Qweugbuzie as those factors emerging from analysis “which represent themes at a higher level of abstraction than the original emergent themes” (2003:398). These two features are integrated into the IISM to ensure inclusivity and acknowledge that blind and visually impaired learners have to overcome challenges associated with the accessibility of information resources.

Finally, each component of the IISM is discussed. The principal elements of each scaffolding component are aligned with the IISM components to show their relationship and level of integration.

6.2 The Conceptual Framework

6.2.1 Context for the Conceptual Framework

The conceptual framework of this study emerges in part from the theoretical research of Kuhlthau (1991; 2008), Moore (2000) and, to a lesser degree, the work of Wilson (1999). The studies of these three researchers were discussed in Chapter 3 with specific emphasis on Section 3.7, where the theoretical framework was discussed. The purpose of adopting the theoretical framework for this research project is two-fold. The first purpose was to synthesise the research findings of the information-seeking process in a concise form to facilitate the comparison between the main research findings of the three different researchers. The second purpose was that the theoretical framework should serve as a guide against which the empirical findings could be tested as part of a Gap Analysis, i.e. to determine the similarities and differences between information-seeking theories (desktop research) and practice (empirical research).

6.2.2 Conceptual Framework Emerging from the Study

The theoretical framework described in Chapter 3, Section 3.7, identified six information-seeking stages and is based on the research of Kuhlthau (1991; 2008), Moore (2000) and Wilson (1999). These stages are the theoretical basis of the IISM. The six stages are:

- i. Personal context
- ii. Information-Seeking purpose
- iii. Personalised information-seeking behaviour
- iv. Information source selection / approach
- v. Evaluating the results of the information-seeking process
- vi. Information-seeking methodology and application of information

The conceptual framework of this study is based on the theoretical framework described in Chapter 3 and a synthesis of the empirical findings, as described in Chapter 5. From the six information-seeking stages mentioned above, as well as the findings of the empirical research conducted at the five schools (Chapter 5, Section 5.4), the researcher identified seven concepts - of equivalent importance. These concepts represent an inclusive information-seeking approach as it relates to blind and visually impaired Grade 12 learners. The conceptual

framework thus generated, using these methods, is consistent with the definition provided by Ngulube, Mathipa & Gumbo (2015), viz. a “conceptual framework shows the relationship between concepts and their impact on the phenomenon being investigated.” The information-seeking behaviour of blind and visually impaired Grade 12 learners is the phenomenon being investigated. There is a relationship between the seven concepts that uniquely describe the information-seeking process of the blind and visually impaired information literate Grade 12 learner who is at the centre of the conceptual framework. See Figure 6.1.

It is accepted that the information-seeking process is initiated by an individual becoming aware of his/her information need; he/she may then decide to address the information need or not. If the person decides to address the information need, he/she will then proceed to address the information need as described by Kuhlthau (1991:366-368); Moore (2000:11) and Wilson (2006(a):659). The seven concepts of the conceptual framework, derived from the findings of the empirical research (Chapter 5; Section 5.4) and supported by the research literature and empirical research where applicable, are explained in Sections 6.2.2.1 to 6.2.2.7 below. With each of the concepts discussed below a practical implication is provided by the researcher to provide context. These practical implications are derived from synthesis and analysis of the literature review and empirical findings.

6.2.2.1 Concept 1: User Awareness of Information Resources and How to Use Them

Blind and visually impaired learners are not exposed to a wide variety of libraries and other organisations that can provide them with information and assistance. They are also not exposed to a variety of information sources, because books, journals, newspapers, and a host of other potential information sources which by their nature (print sources) are inaccessible.

The practical response to address the above statement would require training, orientation, and guidance to make learners aware of organisations, what to expect from them and how to use them to access information sources. Organisations that may be approached are public libraries rendering a service to blind and visually impaired people, the South African Library for the Blind, the South African National Council for the Blind and Disability Units at Universities to name a few. Blind and visually impaired people should be told what exists because “lack of knowledge prevents potential usage” (Cox, 2008:22; Boman, 2006:30).

Training and guidance in the use of information sources are also important here and will be mentioned in the other concepts as well.

Besides, more time should be made available by schools to allow learners to seek information about the interests that they want to pursue after completing Grade 12. This accommodation will assist the learners who suffer from a slow information-seeking process due to their information-seeking inexperience and the complexity in the use of assistive technologies as a visually impaired person (Boman, 2006:62; Khochen-Bagshaw, 2011).

6.2.2.2 Concept 2: Available and Accessible Assistive Technologies (hardware as well as software)

The Council of Ontario Universities (2013) states that accessibility is a "general term used to describe the degree to which a product, device, service, or environment is available to be used by all intended audiences." Something must exist to be accessible or inaccessible, e.g. an operational computer may be available in a library. However, it will be inaccessible for a blind or visually impaired person if screen reading software is not loaded onto the computer. The availability of other assistive devices is essential, e.g. document readers and magnification/reader software, playback devices, and any other type of device to assist access to printed and electronic information are essential. In addition to available and accessible technologies, it is equally important that the blind and visually impaired person can use the technologies. Training and exposure how to use assistive technologies are therefore equally important.

Some practical responses to address the above challenges are:

- i. Learners with low vision can only use a computer for a short time since it hurts their eyes and is tiring when using a computer for an extended period. This physical discomfort has the effect of reducing the time that they can spend seeking electronic information. Information-seeking is, therefore, a strenuous and slow process, and more time should be allowed for the visually impaired learner to use technology during the information-seeking process (Willings, 2016).
- ii. Electronic information tools and reading material should have various accessibility features built into the design, e.g. enlargement of text, description of visual elements

to name but two examples to facilitate navigation and understanding of the text (Gissara, 2018; W3C, 2006).

- iii. Cost of assistive technology devices, software, and data to access the internet is a major barrier for learners. Oldman (2012) points out there is free screen reading software available. The current study showed that the learners had access to electronic data, but that the option to use personal devices outside the school environment or where there is free Wi-Fi was limited due to unaffordable data costs. This challenge should be addressed by the respective schools and the Department of Basic Education.

6.2.2.3 Concept 3: Access to Up-To-Date Information Sources

The published material should be up-to-date and readily available to visually impaired people the same as it is available to sighted people (Cox, 2008:21). Apart from the availability of up-to-date information resources, learners should also receive guidance and training on the scope and use of these resources. This assistance would enable them to find and verify the information and to broaden their information-seeking activity to gain a better understanding of the information for which they are looking (Canadian Library Association, 2016).

6.2.2.4 Concept 4: Access to Accessible Information Sources

Information sources should be accessible in a variety of formats such as braille, other tactile formats, audio (human narrated or synthetic voice), large-print and electronic. Accessibility features should be built into all formats.

In addition to resources available in print, consideration should also be given to alternative information resources such as digital and audio. Neither Kuhlthau (1991) nor Wilson (1999) mentions family or friends as an information source. Moore (2000:39), Pendleton & Chatman (1998) and Myers (1998) confirm the importance that blind and visually impaired people place on consulting other people about their information needs.

6.2.2.5 Concept 5: Access to an Accessible Library or Related Organisation

Access to a functional library that has all the assistive and accessible technologies and material that can accommodate the information needs of blind and visually impaired people is fundamental.

On a practical level, this concept requires school library facilities (and other libraries) that are available, open, and accessible with up-to-date and accessible resources (Rayini, 2017; Australian Library and Information Association, 1998).

The respective schools should also create more opportunities for learners to be exposed to career options that they can consider after completing school. This can be achieved by inviting experts to the school or learners visiting workplaces or tertiary institutions to engage with people in the field in which they are interested.

6.2.2.6 Concept 6: Access to a Trained Librarian or Knowledgeable Person

Cox (2008:21) supports the concept of access to a librarian or qualified person trained to assist or guide with the information-seeking process or the interpretation of information found and to assist with any other information-seeking need of blind and visually impaired people.

On a practical level, this implies that a librarian or trained person should assist and guide visually impaired learners with their information-seeking process, addressing matters such as:

- i. How to clarify their information need,
- ii. How to use assistive technologies,
- iii. Suggesting search terminologies,
- iv. How to verify and confirm the information and to
- v. Render any other information-seeking assistance, guidance, and advice they may require (Australian Library and Information Association, 1998).

6.2.2.7 Concept 7: The Blind and Visually Impaired Information Literate Information Seeker

The above six concepts can also be regarded as indicators of an information literate person, i.e. a person who understands his/her information need and then can locate and evaluate the

information before applying it appropriately. Information literacy is also viewed in a wider context to include other literacies, e.g. computer and media literacy.

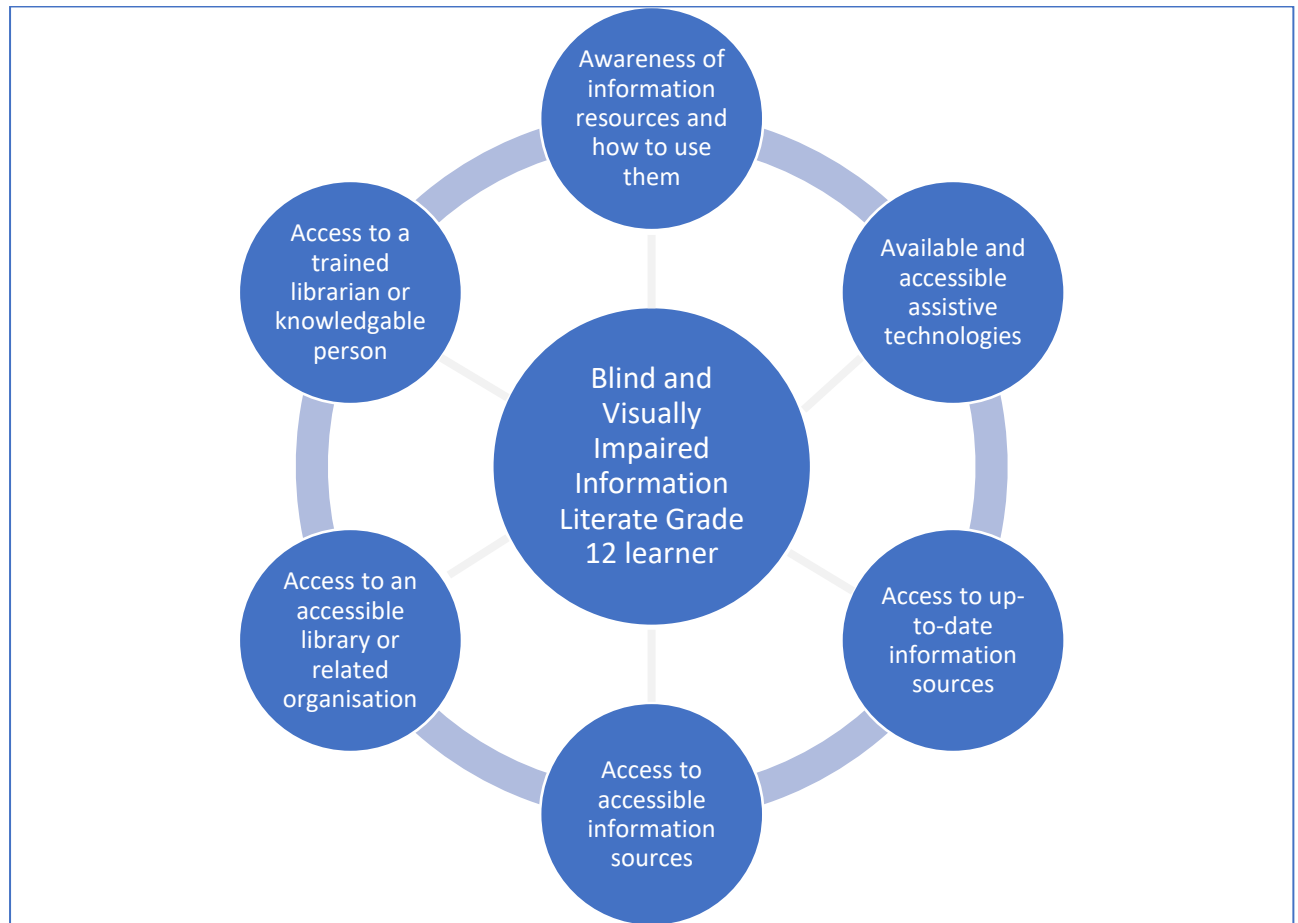
On a practical level, this implies that learners should receive guidance and training in:

- i. understanding their information needs,
- ii. how to formulate information-seeking strategies and search statements to find the information they are looking for,
- iii. how to evaluate the information and apply it (Canadian Library Association, 2016; Schiff, 2000:64).

It should be noted that Schiff indicates that there is “very little research” on the actual teaching of information literacy skills to the disabled population (2002:64). This lack of research is still persistent as confirmed by Weigand, Zylka & Müller (2013) as well as by Nwafor and Chigbu (2017). The researchers state that it appears from the literature that research into information literacy skills of blind and visually impaired students “has hardly been subjected to as much rigorous research as examining the skills of students without any form of sensory impairment.”

All the concepts and practical suggestions are proposed to empower the visually impaired learner to become independent but also with the understanding of their interdependence on other people and technologies in order to confidently and skilfully direct the information-seeking process to address their information need. Figure 6.1 provides a visual representation of the conceptual framework. It also provides an indication of the relationship between the seven concepts and its focus on an empowered blind and visually impaired information literate Grade, 12 learner.

Figure 6.1 Conceptual framework and relationship between components of the Inclusive Information-Seeking Model



6.3 The Six Information-Seeking Stages: Applicability to this Study

In this Section each of the six information-seeking stages of the theoretical framework discussed in Chapter 3, Section 3.7 is contextualised in terms of how these six stages apply to the information-seeking process of blind and visually impaired Grade 12 learners as revealed by the findings presented in Chapter 5. The six stages, derived from a synthesis of the models from the literature are:

- i. Personal context,
- ii. Information-seeking purpose,
- iii. Personalised information-seeking behaviour,
- iv. Information source selection/approach,
- v. Evaluating the results of the information-seeking process,
- vi. Information-seeking methodology and application of information.

Although the information-seeking process consists of six stages, this does not imply that the process necessarily follows a step by step or sequential approach. The process is unique to each person, it is seamless, and some stages may even be skipped, or less emphasis may be placed on certain stages. If a person does not follow the six stages, it does not imply that the quality of his/her information-seeking experience is compromised. The satisfaction level with the result of the information-seeking experience is determined by the individual seeking the information and whether the information addresses the information need. The information behaviour of the 43 learners interviewed during the research is mapped to the stages to identify patterns of similarity.

6.3.1 Stage 1: Personal Context

The context in which people find themselves determines their information needs and is a step before the initiation of information-seeking activities. People usually become aware of their information need first and then begin to seek information to address the information need.

Applicability to the study: learners need the information to make an informed decision about their studies or work they will be pursuing after Grade 12. Twenty out of 43 learners indicated that they wanted to pursue tertiary studies after school and seventeen out of the 20 had started their information-seeking process. Their awareness about their information needs and their intention to address them indicates that they had already acquired a basic level of information literacy. Their information-seeking activity was based on and initiated by their personal information need, their level of information literacy guiding their information-seeking process, and the type of information sources they selected. Two common characteristics among the three learners who had not started seeking information were their indecision about a suitable career and because of this their uncertainty about what information to seek.

6.3.2 Stage 2: Information-Seeking Purpose

People seek information for various personal, academic and professional reasons. There may be factors that support or prevent them from finding appropriate information. In the case of blind and visually impaired people, the likelihood of not finding information due to a range of

barriers is high. Through exploring appropriate information in selected information sources, their understanding of their information need is extended.

Applicability to the study: the information needs of the learners may have originated from any of Maslow's hierarchy of needs (Moore, 2000:10) as they may originate from any other need for information for whatever purpose. The decision they needed to make in the context of the study, i.e. what they intended to do after completing Grade 12, can be defined as an important "life event" because of the significant potential impact on their future. Twenty-nine learners mentioned sixteen different career fields during the empirical research indicating the personal context of the information-seeking process. These learners who were clear on what they intended to study showed their interest which directed their information-seeking purpose.

6.3.3 Stage 3: Personalised Information-Seeking Behaviour

Because each user is different, their information needs are also different. The way they collect information will, therefore, be unique and will be based on information activities with which they are comfortable and within their capabilities.

Applicability to the study: visually impaired Grade 12 learners shared similar backgrounds and experienced a variety of similar challenges, one being their inability to read standard printed text. The Internet was most frequently identified as the preferred information source suitable to the information-seeking behaviour of the learners. Thirty-one of the 34 learners who had initiated the information-seeking process used the Internet. Parents (n=19) and friends (n=19) were mentioned as second and third types of information sources frequently used. Each learner expressed comfort with the information sources they had found and used.

6.3.4 Stage 4: Information Source Selection/Approach

Once people have identified an information need, they will decide on the best way to find the information to address the need. Depending on the information need, people can find information intentionally or unintentionally. In this process, there may be factors that either deter them from initiating an information search or motivate them to find information.

Applicability to the study: Having identified their need to find information about their plans, the learners began to look for information, starting from the broad and general, then becoming more focused. Many identified the need to consult an informed person, such as a librarian or teacher when they encountered difficulties or uncertainty. This uncertainty is a typical effect experienced by blind and visually impaired people because of the challenges encountered in finding and using information.

6.3.5 Stage 5: Evaluating the Results of the Information-Seeking Process

After finding information through various means, a person will match the information to the need and perhaps adjust the query. People use information sources with which they are confident.

Applicability to the study: learners either initiated the information-seeking activity on their own or used the information that was generally available from various information providers (intermediaries) or sources. After engaging with various information sources learners determined whether the information accessed addressed their information need or whether they needed to reformulate the query, change or terminate their information-seeking strategy. Thirty-four learners started with the information-seeking process. Twenty-seven of this group indicated that they required assistance with the interpretation of the information found as reported in Chapter 5.

6.3.6 Stage 6: Information-Seeking Methodology and Application of Information

People use various tools and mechanisms to find and store the information for which they are looking. Once they have found the information addressing their information need, they then decide how to process and apply it.

Applicability to the study: learners seeking information applied specific mechanisms familiar to them and once they found the information applied it in a manner that was useful to them or captured it for future reference using their preferred method. Thirty of the 34 learners who initiated the information-seeking process indicated that they were satisfied with what they found. At the time of the interviews, some learners indicated what they had found was satisfactory. They had, however, not concluded their information seeking. They were convinced that they would be able to apply it as part of their preparations for tertiary studies.

The seven concepts, as discussed in Sections 6.2.2.1 to 6.2.2.7 form the basis for the information-seeking process as revealed by analysis of the data. It is, therefore, the basis of the IISM applicable to blind and visually impaired learners which are proposed towards the end of this chapter. The conceptual framework centres around two fundamental principles, i.e. access and accessibility, which are used as qualifying terms. Access and Accessibility are defined in Chapter 1, Section 1.11.2 and 1.11.3 and the two concepts are further explored in Section 6.5.2 of this chapter.

In summary, one of the main success factors of the information-seeking process of a blind and visually impaired Grade 12 learner is dependent on the availability of assistive technologies. These technologies should enable them to access up to date information sources available in accessible organisations or other platforms and where there are trained and knowledgeable people to assist them when required.

6.4 Gap Analysis

A Gap Analysis is the "activity of studying the differences between standards and the delivery of those standards" (Brown and Plenert, 2006:319). The six stages of the information-seeking process, as described earlier in this chapter are regarded as the "standards" for this study. Their exposition is based on an analysis and synthesis of the information-seeking research of Kuhlthau (1991; 2008), Moore (2000) and Wilson (1999). The findings of the empirical research as described in Chapter 5 are regarded as the "delivery of those standards", i.e. the six information-seeking stages discussed in Section 6.3 of this chapter were compared to the empirical research findings to identify any differences or similarities.

The Information-Seeking Model of Kuhlthau (1991; 2008), the information needs model of Moore (2000) and the information-seeking behaviour model of Wilson (1999) were analysed in Chapter 3. The result of this analysis led to the identification of the six generic information-seeking stages, as described in Section 6.3 of this chapter. The following two general gaps were identified when comparing the research models and the empirical findings.

6.4.1 Gap One: The Impact of Sight on the Information-Seeking Process.

Kuhlthau (1991; 2008) and Wilson (1999) developed their Information-Seeking Models from the perspective of people who have sight. Lack of sight and how that may impact on the information-seeking process is therefore not acknowledged by them. Moore's (2000) research of blind people's information needs is based on the realities of people with visual impairment, thus acknowledging the challenges in seeking information by people with visual impairment.

6.4.2 Gap Two: Lack of Accessibility of Information Resources

Kuhlthau (1991; 2008), Wilson (1999) and to a lesser extent Moore (2000) assume that accessing information is a given for all people. It is assumed that access to information structures, e.g.:

- i. libraries and related organisations are possible;
- ii. that information tools are available and can be used by all people;
- iii. that information sources are available;
- iv. that all people can interact with these information sources, and
- v. that people have many options when seeking information and can easily navigate from one option to the other until the information need has been addressed.

This kind of information-seeking environment is not the norm for blind and visually impaired learners specifically, and blind and visually impaired people generally. These groups do have options and ways to seek information. However, these are limited in most cases, and information sources need to be adapted to enable them to find information with the necessary accessible technologies and people to assist them where required.

6.4.3 Specific Gaps

Apart from these two general gaps, several specific gaps were identified in the comparison of the six information-seeking stages, forming the basis of the theoretical framework, and the findings in the empirical component. Those gaps are set out in Table 6.1

Table 6.1: Gap Analysis findings

Information-Seeking Stages	Empirical findings	Comments and Gaps
<p><u>Stage 1: Personal context.</u> The context a person finds him/herself in determines and initiates their information needs (Wilson, 1999 & Kuhlthau, 2008). In this context, people usually seek information to understand the environment they function in (Moore, 2000).</p>	<p>Forty-three blind and visually impaired Grade 12 learners from five schools were interviewed. Thirty-nine of the 43 learners indicated their intention to continue with tertiary studies; 34 of the learners had already started with the information-seeking process. Twenty-seven learners indicated satisfaction with the information they had located thus far. At the time of the interviews, some were still searching for additional information. Challenges to articulate seeking strategies were identified.</p>	<p>Comments Since all learners were in Grade 12, all of them were aware of the context, they found themselves in, i.e. to investigate post-Grade 12 options by finding relevant information. Thirty-nine out of 43 learners were clear about their future post-Grade 12 and 34 had started the information-seeking process to find information about study options and requirements.</p> <p>All learners clearly understood the environment they were functioning in, i.e. a school with certain limitations in terms of library facilities and their limitations as a visually impaired person with accessibility challenges.</p> <p>Finding: There is no gap between the theory and the empirical findings for stage one.</p>
<p><u>Stage 2: Information source selection/approach.</u> Once people have identified an information need, they will decide on the best way to find the information to address the need (Kuhlthau,</p>	<p>The 34 learners who had started the information-seeking process found the information in various ways, e.g. talking to adults and friends, and doing Internet searches. Internet searching was the most popular</p>	<p>a. Gap identified (Gap 3) Learners did not know the “best” or “most appropriate” way to find information because of their limited awareness of potential information sources. Learners went to</p>

Information-Seeking Stages	Empirical findings	Comments and Gaps
<p>2008). Depending on the information need people find information intentionally or unintentionally (Moore, 2000). In this process, there may be factors that hinder the information-seeking process or that motivate them to find information (Wilson, 1999).</p>	<p>source of information with all its accessibility challenges. The examples provided by the learners about their information-seeking topics and information-seeking questions indicated that they had a general approach to the task, lacking focussed topics about their choice of study and all the related university application requirements.</p> <p>The Grade 12 learners were all visually impaired and were confronted with accessibility challenges, e.g. font-size challenges, limited cell phone data to do searches and inaccessible formats. The school environment posed additional limitations on the information-seeking process, e.g. no functional school library, no person in the library to guide the learners, and limited and or outdated information sources.</p>	<p>the apparent information source, e.g. the Internet. They lacked informed assistance and guidance on this decision at school and externally. They, therefore, found the information in an ad hoc manner by talking to friends, adults, and doing Internet searches.</p> <p>b. Gap identified (Gap 4) Inexperience in information-seeking strategies and the formulation of search questions made the information-seeking process challenging. Lacking a clear focus of what they needed to search for also compromised the relevance of the information found. Also, English was not the first language of all the learners, thus contributing to the challenge of formulating the questions.</p>
<p><u>Stage 3: Information-seeking purpose.</u></p> <p>People seek information for various personal reasons (Moore, 2000). There may be factors that support or prevent them from finding appropriate information (Wilson, 1999). Through exploring appropriate</p>	<p>All 34 learners who had started the information-seeking process indicated that they were pursuing various career options, as reported in Chapter 5. They identified factors preventing them from finding appropriate information, e.g. no school library,</p>	<p>Comment</p> <p>Learners engaged in the information-seeking process, and they found information. Although the learners provided samples of the information topics they were seeking, they did not know whether they had found relevant,</p>

Information-Seeking Stages	Empirical findings	Comments and Gaps
<p>information resources, their understanding of their information need is extended (Kuhlthau, 2008).</p>	<p>uncertainty about how to formulate a search question and no exposure to career counsellors. Ten of the 34 learners who had started the information-seeking process were still seeking information is an indication that they realised that the information they had was not sufficient and that they still needed to address additional questions.</p>	<p>comprehensive, and quality information.</p> <p>a. Gap identified (Gap 5) The responses of the learners did not demonstrate that their understanding of their information need was extended. No learner indicated that while they were seeking information, they realised that there was other related information available.</p>
<p><u>Stage 4: Evaluating the results of the information-seeking process.</u></p> <p>After finding information through various means (Moore, 2000), a person will match the information to the need. If the information does not address the need, he/she may adjust the query or search strategy to obtain information that will address the information need (Kuhlthau, 2008). People use information sources they are confident to use (Wilson, 1999).</p>	<p>The Grade 12 learners acquired the information they deemed to be necessary. Some indicated that they were still seeking additional information. The learners also indicated that they reformulated their search questions if their search did not yield the required response. Not one learner mentioned that they were uncomfortable using any of the information sources available to them to seek information despite issues such as accessibility making it difficult for them.</p>	<p>a. Gap identified (Gap 6) Learners explored a limited number of information sources, and the value of some of the information sources was unconvincing, e.g. parents and other adults consulted about tertiary study information requirements. It was not clear whether these sources were reliable in terms of quality, scope, and applicability on the topic of tertiary studies. Learners, therefore, expressed uncertainty about evaluating the value of the information found and whether what they had found was enough. The Gap is, therefore, that their evaluation of the information results was based on a limited number of information sources used and that some of those information sources were not authoritative. There was no sounding board for the</p>

Information-Seeking Stages	Empirical findings	Comments and Gaps
		learners to confirm that what they had was adequate or how to add value to the information-seeking process. (See Chapter 5, Section 5.4.4.)
<p><u>Stage 5: Personalised information-seeking behaviour.</u></p> <p>Because each user is different, their information needs are different (Moore, 2000). The way they collect, the information will, therefore, be unique (Kuhlthau, 2008) based on the methods they are comfortable with (Wilson, 1999).</p>	<p>The learners mentioned fourteen different careers. Learners gave an idea of the nature of the information they were looking at revealing a diversity of topics confirming that different people experienced different information needs. Each one of the learners mentioned different ways of collecting information. Some spoke to a teacher, friends, or parents while others did not. All learners used the Internet. Learners, therefore, found the information in their way.</p>	<p>No Gap was identified for Stage 5.</p>
<p><u>Stage 6: Information-seeking methodology and application of information.</u></p> <p>People use various tools and mechanisms to find and store the information they are looking for (Moore, 2000). The information will then be processed and applied (Kuhlthau, 2008; Wilson, 1999).</p>	<p>The 34 learners who had started the information-seeking process had access principally to two information sources, viz. people and the Internet. Learners had no access to a school library and books or related information material from Tertiary Institutions. Learners had limited awareness of external information providers such as the South African Library for the Blind, South African National</p>	<p>a. Gap identified (Gap 7) The blind and visually impaired learners at the five schools had limited access to a variety of information-seeking tools and resources. Learners also had limited awareness of external information providers able to assist them to seek information. Some learners expressed uncertainty about the applicability and use of the information they had found. (See Chapter 5, Section 5.4.4.)</p>

Information-Seeking Stages	Empirical findings	Comments and Gaps
	<p>Council for the Blind and Disability Units at Universities.</p> <p>Twenty-seven of the 34 learners indicated that they required assistance with how to apply the information they had found. All 34 learners had a system of recording the information they had located which included the filing of print-outs, making own notes, saving the information electronically and memorising it.</p>	

6.5 Strategies to Address the Gaps

The purpose of this Section is to present the gaps identified through the Gap Analysis, as shown in Table 6.1. For each of the seven gaps, a strategy was designed, serving as a reference for the formulation of the IISM for blind and visually impaired Grade 12 learners, viz. Section 6.7 of this chapter. It should be noted that while each of the seven gaps identified has a distinctive character, some of them require the same strategy, e.g. inclusive planning and information literacy training are two cross-cutting strategies addressing several gaps.

6.5.1 Strategy 1: Diversity and Inclusiveness

The first gap refers to the impact of sight on the information-seeking process. Kuhlthau (1991; 2008) and Wilson (1999) developed their Information-Seeking Models from the perspective of people who have sight. Lack of sight and how that may impact on the information-seeking process is therefore not acknowledged. Moore's (2000) research is based on the information need realities of people with visual impairment, thus acknowledging the challenges in seeking information experienced by people with visual impairment. The proposed strategy to address Gap One is as follows: The development of an IISM should acknowledge the fact that people have different information needs. They may, therefore, follow different information-seeking behaviours to address those information needs, and this will be affected by their visual

impairment. One key factor underlying information-seeking behaviour differences between people is the role of their physical abilities. The term “physical disability” covers a wide variety of conditions that may affect a person’s “mobility, stamina or functioning” (Forbus & Gomes, 2009). The point is not to treat people with disabilities separately but to acknowledge disability as part of the diversity of influences on information-seeking. Also, people with disabilities are often excluded when it comes to their political, social, economic, technological, environmental, legal, and human rights (Department of Social Development, 2015; Office of the Deputy President, 1997). The Information-Seeking Model should, therefore, be inclusive and acknowledge the information-seeking needs and behaviour of disabled people in general, and blind and visually impaired people specifically. Furthermore, it would be wrong to consider people with disabilities or blind and visually impaired people as a homogenous group. People with different disabilities have different information needs, requirements and behaviour when seeking information. It is therefore essential to differentiate between the information-seeking behaviour of people with different disabilities and according to the individual’s information needs. The United Nations Convention on the Rights of People with Disabilities confirms this principle by “recognizing the importance for persons with disabilities of their individual autonomy and independence, including the freedom to make their own choices” (United Nations, 2006:2). The statement aligns with the Social Model of Disabilities as addressed in the introduction to Section 6.6.1 of this chapter.

6.5.2 Strategy 2: Access and Accessibility

Gap Two refers to inaccessible information resources. Kuhlthau (1991; 2008), Wilson (1999) and to a lesser extent Moore (2000) assume the following conditions:

- i. accessing information is a distinct activity for all people;
- ii. that access to information structures, e.g. libraries and related organisations, is possible;
- iii. that information tools are available and can be used by all people;
- iv. that people have no disability that may impact on their information-seeking process;
- v. that information sources are available and in a range of formats,
- vi. that all people can interact with these information sources;

- vii. Furthermore, people have many options when seeking information and can easily navigate from one option to the other until the information need has been addressed.

This kind of information-seeking environment is not the norm for blind and visually impaired learners specifically, and blind people and visually impaired people generally (Babalola & Yacob, 2011:141; Beverley, Bath & Barber, 2007:10). These groups do have options and ways of seeking information, but these are limited. Moreover, information sources as well as the buildings where information services are rendered, e.g. libraries, need to be adapted to enable them to find information with the necessary assistive technologies and people to assist them where required.

The proposed strategy to address Gap Two is as follows: Information-seeking involves the search, retrieval, recognition, and application of meaningful content (Kingrey, 2002:1). These activities are only possible if a person knows the information sources and organisations where they can find the information. If these organisations, their information sources, the technology, and related information resources cannot be accessed or are not accessible, then information-seeking will not be possible. To address Gap Two, the work of the Library Cooperation Council (LCC) of Spain in this regard, serves as a good example. The LCC is a collegiate body of inter-administrative composition, dependent on the Ministry of Culture in Spain, to promote library cooperation among public administrations. The LCC identified four objectives in their Strategic Action Plan for 2016-2018 to improve library services in Spain. One is the designing of an inclusive and accessible library model. The intention is to establish libraries that are “accessible to all members of the public, including those who are somehow challenged physically or intellectually” (Library Cooperation Council, 2016). The *National Policy for Library and Information Services in South Africa* (Department of Arts and Culture, 2018:74) is more specific about accessibility. The National Policy makes ample provision for access for people of disabilities in various manners including physical access, i.e. the needs of people with disability should be considered in the design and layout of buildings and delivery of services.

6.5.3 Strategy 3: Orientation and Guidance

Gap Three was identified as low awareness of available information sources. The learners do not know the “best” way to find information because of their limited awareness of potential

information sources. Learners preferred the obvious information sources, viz. the Internet, friends, and family. They were not availed – either at school or outside - informed assistance and guidance on this decision. They, therefore, found the information in an ad hoc manner by talking to friends, adults, and doing Internet searches.

The strategy proposed to address Gap Three is as follows: One of the reasons why the blind and visually impaired Grade 12 learners were ignorant of the potential and variety of available information sources was the lack of a school library and school librarian to render basic orientation and guidance to the learners. Also, South African librarians are not trained to render services to people with disabilities to assist with their information needs in general. The South African Library for the Blind identified this gap several years ago resulting in the implementation of specialised mini-library services in public libraries in partnership with Provincial and Public Library Authorities across South Africa (South African Library for the Blind, 2015). One of the key elements of the mini-library service, over and above the provision of accessible technology and reading material, is that librarians are trained to serve people who are blind or visually impaired. At the same time, the blind and visually impaired community also receive training in how to use the technology and information sources in the library. The *National Policy for Library and Information Services in South Africa* (Department of Arts and Culture, 2018:71) makes provision that library authorities should ensure that library staff receive training in the needs of people with disabilities. Training should be done in consultation with training institutions, activist groups, and specialist services to enhance the quality of service offered to people with disabilities.

It is acknowledged that libraries may not be the only source of information to many people. The information provisioning role played by Government, Non-Governmental Organisations, Citizens' Advice Bureaus, and organisations active in the disability sector and many other structures may also serve as additional sources of relevant and reliable information.

The finding that the learners used friends, parents and other adults that they trust as information sources (as discussed in Chapter 5, Section 5.4.4) is consistent with the research of Pendleton & Chatman (1998) and Myers (1998). The researchers confirm that individuals tend to value the information they have gained from first-hand experiences and within the sphere of their daily lives while seeking advice from others within their social group. Ease of

access and familiarity with the people with whom they engage with are the most obvious reasons for this. The use of this group of people as information sources is, therefore, acceptable. However, it is suggested that with the guidance of a professional person such as a librarian or other information professionals, learners should also be exposed to and assisted in exploring a wider choice of information choices to verify and confirm the correctness of the information found. Babalola and Yacob (2011:142) also acknowledge the high value visually impaired people place on “interpersonal sources” and suggest that librarians and other information service providers as professionals should introduce visually impaired people to a broader scope of information sources.

6.5.4 Strategy 4: Information Literacy training, Language and Formulation of Information Searches

Gap Four was the formulation of information-seeking questions. Inexperience with information-seeking strategies and the formulation of search questions made the information-seeking process challenging for the participants in the study. It became evident that some learners struggled to identify or define their information need – in some instances, the learner was not sure what terminology to use. Lacking a clear focus of what they needed to search for compromised the relevance of the information found. Also, English was not the first language of all learners, thus contributing to the challenge to formulate the information-seeking questions.

The proposed strategy to address the Fourth Gap is as follows: An information professional should be available to assist learners with the formulation of the information searches and address language barriers.

The findings of this study (see Chapter 5, Section 5.3) are consistent with those of Schiff who observed during her research with visually impaired students seeking information that they experienced “conceptual difficulties such as how to narrow down a topic” (2009:68). As discussed under Gap Three, the guidance and advice of a professional librarian or professional information provider should be able to address this gap. This suggestion was also made by a blind university student interviewed by Seyama (2014:70) who recommended that a professional should orient blind students on how to apply search strategies when using library databases.

The ability and skill to formulate information-seeking strategies and questions are essential to finding the information to address the information need. The development of an information literate person through appropriate information literacy training is essential for the success of the information-seeking process. The International Federation of Library Associations (IFLA) Guidelines on Information Literacy for Lifelong Learning (Lau, 2006:16) confirms three information literacy standards, viz. access, evaluation and use of information. Access is the ability of the user to access information effectively and efficiently. Several steps are involved of which the ability to express and define the information need is key, as well as the development of search strategies to enable the person to access information sources and to retrieve the required information.

The importance of the development of an information literate visually impaired person is supported by Nwafor and Chigbu (2017). They propose that information literacy should be part of the curriculum of librarians who should be able to teach the skills to students with visual impairment. They also propose that Information literacy should be a compulsory course for all students at university. Exposure to information literacy training or guidance should lead to empowering the individual to do his/her information-seeking independently and confidently. This point is confirmed by Schiff (2009:67) who states that information literacy “can promote independent critical thinking skills and help sustain life-long learning for a constituency of students who for the most part had been compelled to rely on others to find and evaluate the information sought.” This statement is supported by Kingrey (2002:6) who notes that libraries adopting such an approach to information and information-seeking would function as places where individuals, with the help of professionals, could question, speculate, and experiment in ways that make sense to them, instead of having a standard strategy and answer determined for them.

Language as a barrier during information-seeking, especially where English is a second language as identified during the empirical research, has also been identified by Singh, Kumar and Khanchandani (2015:38) and Safahieh and Singh (2006:482). Language classes and the assistance of a knowledgeable adult, e.g. teacher, librarian or other professional may assist in addressing the challenges experienced by Grade 12 learners.

6.5.5 Strategy 5: Guidance of an Information Professional

Gap Five is the lack of an extensive understanding of the information need. The responses of the learners, as discussed in Chapter 5, did not demonstrate that their understanding of their information need was extensive. No learner indicated that while they were seeking information, they realised that there was much other related information available.

The proposed strategy to address Gap Five is as follows: It is suggested that there are two reasons why not one of the 34 learners who had started their information-seeking process mentioned that their understanding of their information need had been extended. One possible reason is that their information query was very simplistic and based on a question and answer approach. Once they had found some information, they terminated the information-seeking process. Learners did not see their information need holistically and therefore, would have missed valuable information because they were not aware how their information needs related to other information fields or sources. This level of ignorance is confirmed by the research by Bates, Wilde and Siegfried (1995:32,36) during which students were exposed to an integrated database which revealed work in other fields relevant to their work of which they had been unaware.

A second reason is that the learners used a limited number of information sources. If their perceived information need was met, they did not explore the matter further as discussed in the findings for each school, see Chapter 5, Sections 5.3.2.1 and 5.3.2.5, sub-Section 4. This limitation can be understood in the circumstances where the learners experienced challenges. If they were unsuccessful, they would continue the seeking process until they found something, as was the case with 32 of the 34 learners who started the information-seeking process. Two of the 34 learners abandoned the information-seeking process while one looked for different information sources.

Moore's (2000:37) description of how people absorb information around them and their ability to find answers to questions addresses these two challenges. He makes the point that sighted people absorb up to three-quarters of the information they receive through sight. Sighted people, therefore, may see something that helps them learn or find out to understand better – their understanding of their information need is extended. This option is not the case

for people who are visually impaired. Furthermore, Moore makes the point that because visually impaired people may be unaware of information sources or options, they do not ask the questions that would generate useful strategies to find the information they are seeking. This reality is supported by the statement of Levitt (1997) that visually impaired people, in general, will not ask for information unless they think that the information will be of value to them. As suggested in the analysis of Gap Four above, exposure to information literacy training for visually impaired people will assist them to respond to their information needs in an informed manner. This exposure, as well as access to an information professional to provide the necessary guidance and advice, will assist them to extend their understanding of the information need.

6.5.6 Strategy 6: Training in the Evaluation of Information

Gap Six concerns their difficulties to evaluate the quality of the information found. Learners explored a limited number of information sources, and the value of some of the information sources was unconvincing, e.g. parents and other adults consulted about tertiary study information requirements. It is not clear whether these sources were reliable in terms of quality, scope, and applicability on the topic of tertiary studies. Learners, therefore, expressed uncertainty about evaluating the value of the information found and whether what they had found was enough. Gap Six is, therefore, that their evaluation of their information results was based on a limited number of information sources used and that some of those information sources were not authoritative or verifiable. There was no sounding board for the learners to confirm that what they had found was enough or how they might add value to the information-seeking process.

The proposed strategy to address Gap Six is as follows: As mentioned in the discussion of Gap Four, IFLA's *Guidelines on Information Literacy for Lifelong Learning* (Lau, 2006:16) confirm three information literacy standards, viz. access, evaluation and use of information. The requirement for evaluation is that the user should evaluate the information critically and competently. Although 30 out of 34 learners who had started the information-seeking process indicated that they had found the information they were looking for some learners expressed uncertainty about whether the information they had found answered their information need in terms of their tertiary studies. This doubt indicates that they had at most done a basic level

of evaluation. Evaluation is an “immensely difficult and complicated process” (Fitzgerald, 1999:1, 22). Fitzgerald, therefore, proposes to teach learners evaluation strategies “over a span of years” because it is too difficult to be taught in one teaching unit. Fitzgerald (1999:3) proposes several components of evaluating information derived from a synthesis of related literature. The components are metacognition, goals, a signal to begin the process, deliberation, and decision.

Two observations were made in this regard during the interviews with the 34 learners who had started the information-seeking process. There was no evidence that any of the 34 learners had undertaken any of these activities suggestive of a complex and thorough evaluation process. Secondly, not one of these 34 learners interviewed for this study had received any training in the evaluation of information incorporating the components proposed by Fitzgerald (1999:3). The reasons for this were not tested during the research, but two suggestions emerge from the data. Because there was no teacher librarian to assist with the information-seeking process, the learners had no sounding board to advise them that the information they had found might not be comprehensive, or that it may lack validity, reliability and usefulness. Secondly, since accessible information sources were limited, learners relied on the Internet. It is difficult to evaluate information if it is not tested against another source. Beverley, Bath and Barber (2007:21) explain that the challenge for blind and visually impaired people to evaluate the information they find on the Internet is that they are not able to visualise the information. It is proposed that a knowledgeable person provide Information Literacy training to blind and visually impaired learners to enable them to evaluate the quality and value of information.

6.5.7 Strategy 7: Expansion of Inclusive Publishing and Assistance by a Professional

Gap Seven addressed the limited information resources and uncertainty about the relevance of information found. Blind and visually impaired learners at the five schools had limited access to a variety of information-seeking tools and resources. Learners also had limited awareness of external information providers able to assist them to seek information. Some learners expressed uncertainty about the relevance and use of the information they had found.

The proposed strategy to address Gap Seven is as follows: Various authors have confirmed the limited availability of accessible material for blind and visually impaired people and students. The World Intellectual Property Organisation is referring to it as a “book famine” (Boman, 2006:33; Kavanagh, 2005; World Intellectual Property Organisation, 2016:2). The fact that there is only one operational school library between the five schools aggravates the situation. The South African Library for the Blind (SALB) and the South African National Council for the Blind (SANCB) are two National organisations whose main purpose is to provide blind and visually impaired people with information. The low awareness of the 34 learners who had initiated their information-seeking process of these two organisations pose an additional challenge. Only ten of the 34 learners were aware of the SALB, and eight were aware of the SANCB. With this low awareness, it is difficult for blind and visually impaired learners to find and use information.

The internet and people were the two most popular information sources. It was found that all 34 learners who initiated the information-seeking process used the Internet (n=34). Friends and parents are used as the second most popular information source. Both groups of people were mentioned by 19 learners each. These two main categories of information also present challenges as mentioned earlier, e.g. the Internet with its accessibility challenges and the reliability of the information provided by personal contacts. A possible conclusion that could be made considering the aforementioned is the visually impaired learners' information-seeking methodology was constrained on account of their disability with the associated consequence of restricted evaluation and uncertain relevance of the information acquired. Information that is found which is of limited scope and not verified may lead to misinformation, misunderstanding and frustration.

The Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled, (Marrakesh Treaty in short), was adopted by member countries of the World Intellectual Property Organisation (WIPO) in 2013 and came into force in 2016. It forms part of the body of international copyright treaties administered by WIPO. Governments who ratified the Treaty are required to introduce in their copyright legislation a standard set of limitations and exceptions to copyright rules permitting the reproduction, distribution and making available of published works in formats designed to be accessible to blind and visually impaired people. It also permits the exchange of these works

across border by organisations that serve those beneficiaries (World Intellectual Property Organisation, [WIPO], n.d.).

The ratification of the Marrakesh Treaty by the South African Government will assist libraries and other organisations serving blind and visually impaired people to obtain accessible reading material free of charge and free from copyright restrictions from national and international publishers. This provision is made in Article 5 and 9 of the Marrakesh Treaty (World Intellectual Property Organisation. 2013(b):5-7). South African publishers through the Publishers' Association of South Africa (PASA) should be encouraged and advised on the benefits of accessible publishing that will make publications accessible to all people regardless of their disability. Production houses of braille and other accessible reading material in South Africa, e.g. the South African Library for the Blind; Pioneer School for the Blind, BlindSA, schools for the blind and any other organisation serving the reading needs of blind and visually impaired people, should be assisted with appropriate resources to expand their programmes to produce accessible reading material. This assistance will include addressing budgetary issues to enable these organisations to purchase published accessible reading material. Cooperation between these institutions should also be encouraged to reduce production costs and expand access to reading material. Information literacy training and the guidance of an information professional, as proposed in Strategy 4 (Section 6.5.4) and Strategy 5 (Section 6.5.5), to assist blind and visually impaired learners to locate, access, evaluate and use information is re-emphasised as well as their participation in information literacy training.

In summary, the proposals to address the Seven Gaps should not be seen in isolation of each other. The seven proposals to address the Gaps establish defensible elements to underpin the development of an IISM.

6.6 Scaffolding Components of the Inclusive Information-Seeking Model

6.6.1 Context

The main objective of this research as outlined in Chapter One was to determine to what extent existing information-seeking behaviour models and related research as presented by researchers in the library and information studies field apply to the information-seeking behaviour of a group of blind and visually impaired Grade 12 learners when seeking for

specific information. If the existing Information-Seeking Models were found to be unresponsive, or only partially responsive to the needs and realities of blind and visually impaired learners, the intention was to develop an IISM to address the lacuna/e. It is essential to emphasise the term “inclusive”. The reason for this arises from the work of two international organisations with significant influence in the disability sector, as explained below.

The rights of disabled people and their position in society is confirmed and asserted in the Convention on the Rights of People with Disabilities (United Nations, 2006:1), recognising “their inherent dignity and worth and the equal and inalienable rights of all members of the human family.” It “reaffirm[s] the universality, indivisibility, interdependence and interrelatedness of all human rights and fundamental freedoms and the need for persons with disabilities to be guaranteed their full enjoyment without discrimination.” This clause underpins the motivation to propose an IISM.

The influential Union of the Physical Impaired Against Segregation in the United Kingdom (Union of the Physically Impaired Against Segregation, 1976(a)) proposed, more than 40 years ago, the recognition of the Social Model of Disability as opposed to the Medical Model of Disability. The Medical Model views the disabled person as someone with a problem that must be dealt with separately. In contrast, the Social Model of Disability favours the view that society should take account of people with disabilities and include them in the mainstream of social activities (Union of the Physically Impaired Against Segregation, 1976(b): 14). The central principle informing the proposed IISM is therefore the Social Model of Disability with its emphasis on inclusivity.

6.6.2 Salient Features Extracted from the Research and Scaffolding Components

Two salient high-level features were extracted from the research, i.e. meta principles that underpinned all the findings related to the common characteristics shared by all participants. The two features were extracted after distilling seven concepts from the literature research (Section 6.2.2) and identified and mitigated the Gaps emerging from the Gap Analysis (Section 6.4) and strategies to address the identified Gaps (Section 6.5). Based on the analysis of the research findings, the two high-level features were identified that feeds into the IISM.

- i. Salient feature 1: From exclusion to inclusion. The information-seeking needs and realities of blind and visually impaired people are not considered or incorporated in the Information-Seeking Models of Kuhlthau (1991) and Wilson (1999). Moore's (2000) research is focussed on the information needs of blind and visually impaired people with less emphasis paid to their actual information-seeking behaviour. The research neglects inclusivity, especially as it relates to the information needs of people with disabilities. The IISM for blind and visually impaired Grade 12 learners is rooted in the concept of inclusivity. Libraries and any other organisation providing information should consider the needs of blind and visually impaired people when developing their services and products from inception and not as an afterthought.

- ii. Salient feature 2: From information-seeking constraints as experienced by blind and visually impaired people to accessible information-seeking experiences. The Information-Seeking Models of Kuhlthau (1991) and Wilson (1999) assume that information is readily available in print and electronic formats and that the information seeker can use information-seeking tools without challenge to find the information to address their information need. Their research is based on an ideal information environment. However, it fails to address exceptions where information tools and resources may not be available and where the information seeker may have physical challenges which have a deleterious effect on their ability to interact with those information tools and resources. The research reported in the literature does not address the information-seeking challenges experienced by people with disabilities in terms of availability of information material and assistive technologies to access information that is available to them.

These two salient features from the research are integrated into each of the seven components of the IISM.

The IISM is constitutive of the convergence of four scaffolding elements to address the challenges experienced by blind and visually impaired Grade 12 learners, i.e.:

- i. information-seeking stages (Section 6.3);
- ii. conceptual framework of information-seeking (Section 6.2);

- iii. strategies to address Gaps between the literature research and empirical research findings Section 6.5); and
- iv. the principles of information-seeking that all information-seeking activities should adhere to (Section 6.6.3).

The first three have been discussed above; the fourth scaffolding component is addressed in the following Section.

6.6.3 Information-Seeking Principles

From the seven strategies to address the identified Gaps as discussed in Section 6.5, seven principles emerged that provide context to guide and strengthen the IISM. These principles are:

- i. **Diversity:** Information needs are diverse because they are experienced and expressed by a diverse number of people. Blind and visually impaired people are part of this diverse spectrum of people whose information-seeking behaviour must be accommodated.
- ii. **Inclusiveness:** It is essential to include and consider people with disabilities in general, and blind and visually impaired people specifically, when developing an IISM. An understanding of their information-seeking needs should be an inclusive and integral part when planning, developing and rendering information services. This principle addresses the salient research finding of exclusivity as discussed in Section 6.6.2(i) above.

Note: The next two principles, Access, and Accessibility can be regarded as the same. The term “access” is often used as a generic principle in the literature. In this study, a slight difference in emphasis is made between these two principles. The difference is explained below in Section iii) and iv).

- iii. **Access:** This principle focuses on the physical information environment where the information-seeking activity takes place, and the tools to make information-seeking possible. An excellent example of this is the Policy on Students and Staff with Disabilities by the University of KwaZulu-Natal (2004:2). In this Policy, it is stated that

the University is committed to “making tertiary education and the working environment universally accessible and inclusive for all students and staff, including those with disabilities.” In other words, provision should be made to ensure access to the building, an area in a building, the equipment, furniture, technologies, and other resources. It is possible to have accessible information sources available, but if there is no access to that environment, it would be difficult or impossible to use those information sources. The skill of the person accessing available information resources is also central to this principle. The person should be able (information literate) to use the resources and apply them.

- iv. **Accessibility:** This principle refers to the information sources and software that should assist a blind and visually impaired person find the information he/she is looking for, to navigate those information sources and to use the information found. If an information source, e.g. audiobook, digital or e-book, website, braille book, catalogue, or database, lacks accessibility features then this presents a barrier to finding the information to address the information need. Access and accessibility address the other salient research finding discussed in Section 6.6.2.(ii).
- v. **Orientation and Guidance:** Both the provider of an information service, as well as the recipient of the information service, require orientation and guidance. The information provider requires orientation and guidance on how to be sensitive to the information needs of a blind and visually impaired person and how to respond in an informed and professional manner. The recipient of the service requires orientation and training in terms of what to expect from the information service provider, the use of assistive technologies, assistance during the information-seeking process and any other general support required during the information-seeking process.
- vi. **Information professional:** Individuals seeking information should be able to interact with an information professional to assist with the process as and when required. This requirement links with the previous principle in terms of orientation and guidance on the choice of information sources to consult, i.e. how to use those information sources as well as the assistive technologies available; the formulation of information queries; and the evaluation of search results. That is, the information

professional must train blind and visually impaired people, specifically in information literacy skills and identify and remove any barriers experienced by a blind and visually impaired person to access and use the information.

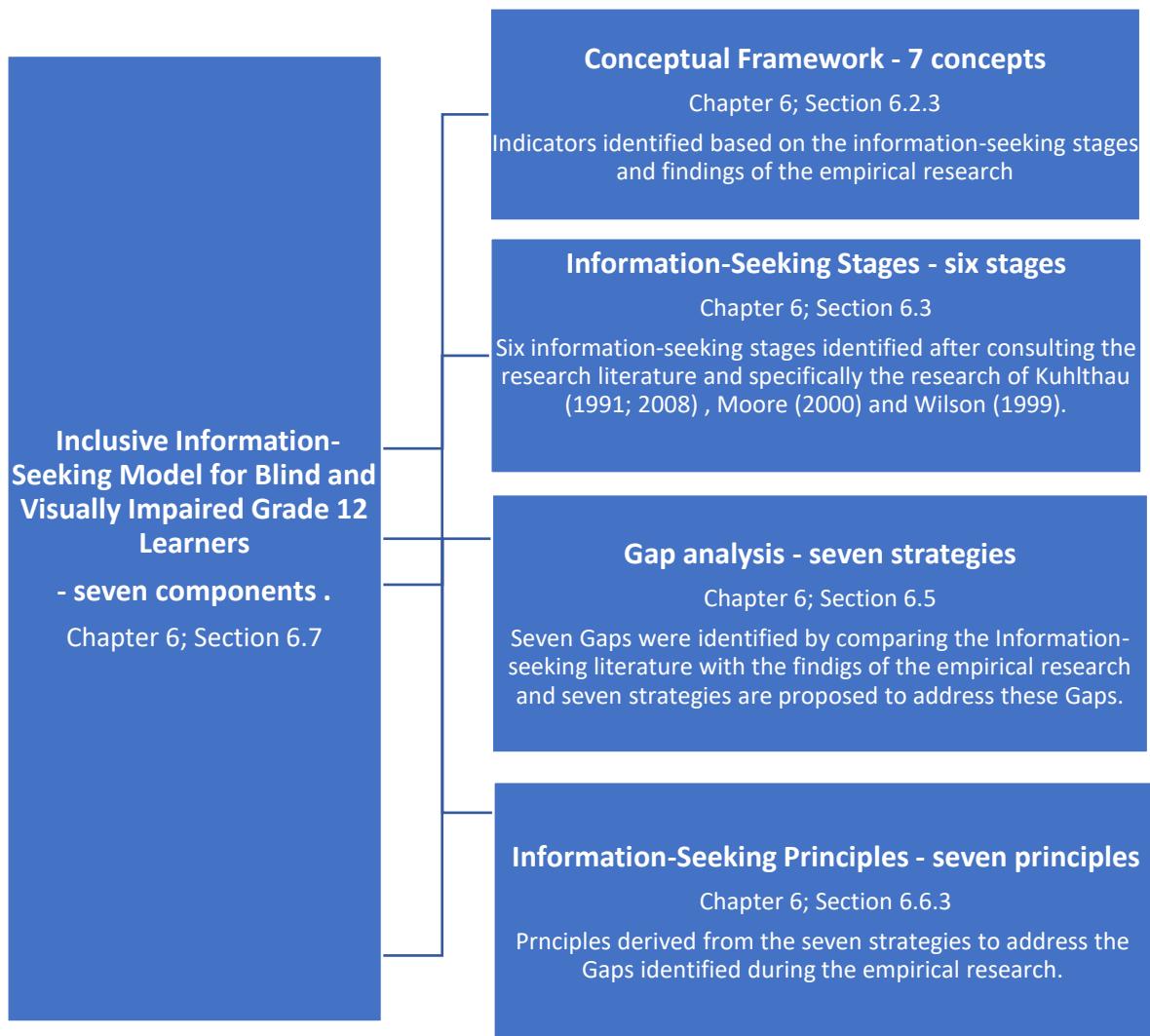
- vii. Information literacy: One of the critical functions of the information professional is to contribute to the development of the information literacy levels of the individuals served by the organisation serving visually impaired people. This responsibility is information literacy in general but also with specific reference to the information needs of blind and visually impaired people and how to be responsive to them. The professional must train and guide the blind and visually impaired person in the critical elements of information literacy, i.e. access, evaluation and use of information. It is a continuous process.

With the seven information-seeking principles in place, it is now possible to propose an IISM.

6.6.4 Rationale for the Inclusive Information-Seeking Model and Scaffolding Components

Several information-seeking and needs models have been identified and described in this study. The statement of Wilson (1999:250) provides a sound viewpoint on the development of a model: "A model may be described as a framework for thinking about a problem and may evolve into a statement of the relationships among theoretical propositions." The proposed IISM is not based merely on theoretical propositions but structured on four scaffolding elements that were generated from the analytical and synthetic processes involved in the study. There is a relationship between these scaffolding elements and practical realities as they relate to the information-seeking behaviour of blind and visually impaired Grade 12 learners. Figure 6.2 provides a graphic and high-level overview of the IISM with the four scaffolding components as an aide to understand the IISM and how it is structured.

Figure 6.2: Inclusive Information-Seeking Model and its Scaffolding



Each of the four scaffolding components consists of several elements. Some of the elements overlap with one or more scaffolding component/s, and some elements are unique to a scaffolding component. Table 6.2 provides a consolidated overview of the four scaffolding components with their respective elements. It should be noted that the purpose of Table 6.2 is to provide the reader with an overview of the scaffolding components and elements. It is meant only to tabulate the various elements and is not meant to serve as a comparison of the elements on a horizontal level. The linkages between the four scaffolding components and their corresponding elements to the proposed seven components of the Inclusive Information-Seeking Model are presented in Section 6.8, Table 6.3.

Table 6.2: Inclusive Information-Seeking Model: four scaffolding components with their respective elements

Scaffolding Component 1	Scaffolding Component 2	Scaffolding Component 3	Scaffolding component 4
Information-Seeking Stages (ISS) (Section 6.3)	Concepts from the Conceptual Framework (CCF) (Section 6.2.2)	Gap Strategy (GS) (Section 6.5)	Information-Seeking Principles (ISP) (Section 6.6.3)
ISS 1: Personal Context	CCF 1: User awareness of information resources and how to use them.	GS 1: Diversity and Inclusiveness	ISP 1: Diversity
ISS 2: Information-seeking purpose	CCF 2: Available and accessible assistive technologies	GS 2: Access and Accessibility	ISP 2: Inclusiveness
ISS 3: Personalised information-seeking behaviour	CCF 3: Access to up-to-date information sources	GS 3: Orientation and Guidance	ISP 3: Access
ISS 4: Information source selection / approach	CCF 4: Access to accessible information sources	GS 4: Assistance of an Information professional	ISP 4 Accessibility
ISS 5: Evaluating the results of the information-seeking process	CCF 5: Access to an accessible library or related organisation	GS 5: Information Literacy and Guidance	ISP 5: Orientation and Guidance
ISS 6: Information-seeking methodology and application of information	CCF 6: Access to a trained librarian or a knowledgeable person	GS 6: Training in the evaluation of information	ISP 6: Information professional
	CCF 7: Characteristics of an information	GS 7: Assistance of an information professional	ISP 7: Information Literacy

Scaffolding Component 1	Scaffolding Component 2	Scaffolding Component 3	Scaffolding component 4
Information-Seeking Stages (ISS) (Section 6.3)	Concepts from the Conceptual Framework (CCF) (Section 6.2.2)	Gap Strategy (GS) (Section 6.5)	Information-Seeking Principles (ISP) (Section 6.6.3)
	literate information seeker		

6.7 The Inclusive Information-Seeking Model

In Section 6.2.2 of this chapter, the Conceptual Framework of this study was outlined based on seven concepts. In Section 6.6, the four scaffolding components of the Inclusive Information-Seeking Model (IISM), each with its primary elements, were analysed and presented. The outcome of this analysis led to the conclusion that the seven concepts should be accepted as the seven components of the IISM. A “concept” is described in the Merriam-Webster Dictionary (Merriam-Webster, n.d.) as an "abstract or generic idea generalised from particular instances." The seven concepts are no longer regarded as general ideas but have now been tested through the literature and empirical research as presented in the four scaffolding components.

The seven components of the IISM are presented below with supporting research references to validate their incorporation into the model. It is consequently proposed that the seven components of the IISM are essential for the success of the information-seeking process for blind or visually impaired Grade 12 learners to address their information need or needs. It is also proposed that the components are germane also for blind and visually impaired people in other contexts. The reason for this has been mentioned in Section 6.6.2 addressing the two salient research features, i.e. inclusivity and accessible information-seeking experiences.

Inclusion is aptly described in the *White Paper on the Rights of People with Disabilities* published by the Department of Social Development (2016:8) in South Africa after extensive public consultations as a universal human right embracing all people irrespective of race, gender, disability or any other difference. The White Paper further states that it is “about equal access and opportunities and eliminating discrimination and intolerance for all.” The IISM is in support of this stated ideal. Also, the IISM is addressing constraints experienced by

blind and visually impaired people when seeking information. The constraints referred to are inaccessible formats and technologies. The Web Content Accessibility Guidelines developed by the World Wide Web Consortium (W3C, 2006) to make Web content accessible for all people with disabilities and other users such as older users serve as one strong example of addressing technological constraints. The work of the DAISY Consortium on EPUB3 to develop digital publishing standards, tools, and inclusive publishing best practices serve as another example of efforts to address format constraints. Because of the work by international organisations to address the two salient research features, it is proposed that the IISM are germane to all blind and visually impaired people seeking information. The seven components of the IISM are based on the two broader salient research features. The components are:

6.7.1 Component 1: User Awareness of Information Resources and How to Use Them

Blind and visually impaired learners are not exposed to a wide variety of information resources such as libraries, agencies and other organisations that can provide them with information and assistance. They are also not exposed to a variety of accessible information sources, e.g. books, journals, newspapers, and a host of other potential information sources. The responses of the learners to the relevant questions of the empirical research instrument indicated their preferred mode of information-seeking to overcome the challenges that they experienced. To assist and improve their information-seeking experience they would benefit from training, orientation, and guidance to make them aware of organisations, what to expect and how to use these organisations as well as the potential information sources that they offer. Blind and visually impaired people should be informed about what exists because “lack of knowledge prevents potential usage” (Cox, 2008:3, 22; Boman, 2006:30).

6.7.2 Component 2: Available and Accessible Assistive Technologies (hardware as well as software)

The visually impaired person needs access to the Internet and other electronic information sources through computers with screen-reading software. The availability of other assistive devices such as document readers and magnification/reader software, playback devices and any other type of device to assist with access to printed and electronic information is essential. This finding is consistent with the research findings by Rayini (2017) who indicates

that there is a broad range of adaptive or assistive technologies available to give blind users and equal opportunity as the sighted to access information in electronic formats.

6.7.3 Component 3: Access to Up-To-Date Information Sources

The published material should be readily available to visually impaired people as it is available to sighted people (Cox, 2008:21). This finding is consistent with the statement actively promoted by the World Blind Union that the ideal for visually impaired people in terms of accessible reading material is to have the same book at the same time at the same price as it is for people with sight (Pilch, 2009:1; World Intellectual Property Organisation, 2013(a):2).

6.7.4 Component 4: Access to Accessible Information Sources

Information sources should be accessible in a variety of formats such as braille, other tactile formats, audio (human narrated or synthetic voice), large-print and electronic. Accessibility features should be built into all formats. This recommendation is supported by the Canadian Library Association (2016) and the World Intellectual Property Organisation (2013(b):2).

6.7.5 Component 5: Access to an Accessible and Functional Library or Related Organisation

Blind and visually impaired people require access to an accessible and functional library that has all the assistive and accessible technologies and material that can accommodate the information needs of blind and visually impaired people. This recommendation is supported that of the Australian Library and Information Association (1998) and the Department of Arts and Culture (2018:70).

6.7.6 Component 6: Access to a Trained Librarian or other Information Professional

Blind and visually impaired people require access to a trained librarian or qualified person trained to assist and guide them in the information-seeking process and the interpretation of information found and with any other information-seeking needs they may have. This finding is consistent with the findings made by Cox (2008:20-21) after interviewing 44 blind and visually impaired people about services and support rendered to them in County Durham, in the United Kingdom. Several of the people indicated the need to talk to a “trained person” or someone “that understood how they felt” about their information need (Cox, 2008: 20-21). Masey (1997) found that newly visually impaired people expressed a strong desire to talk to

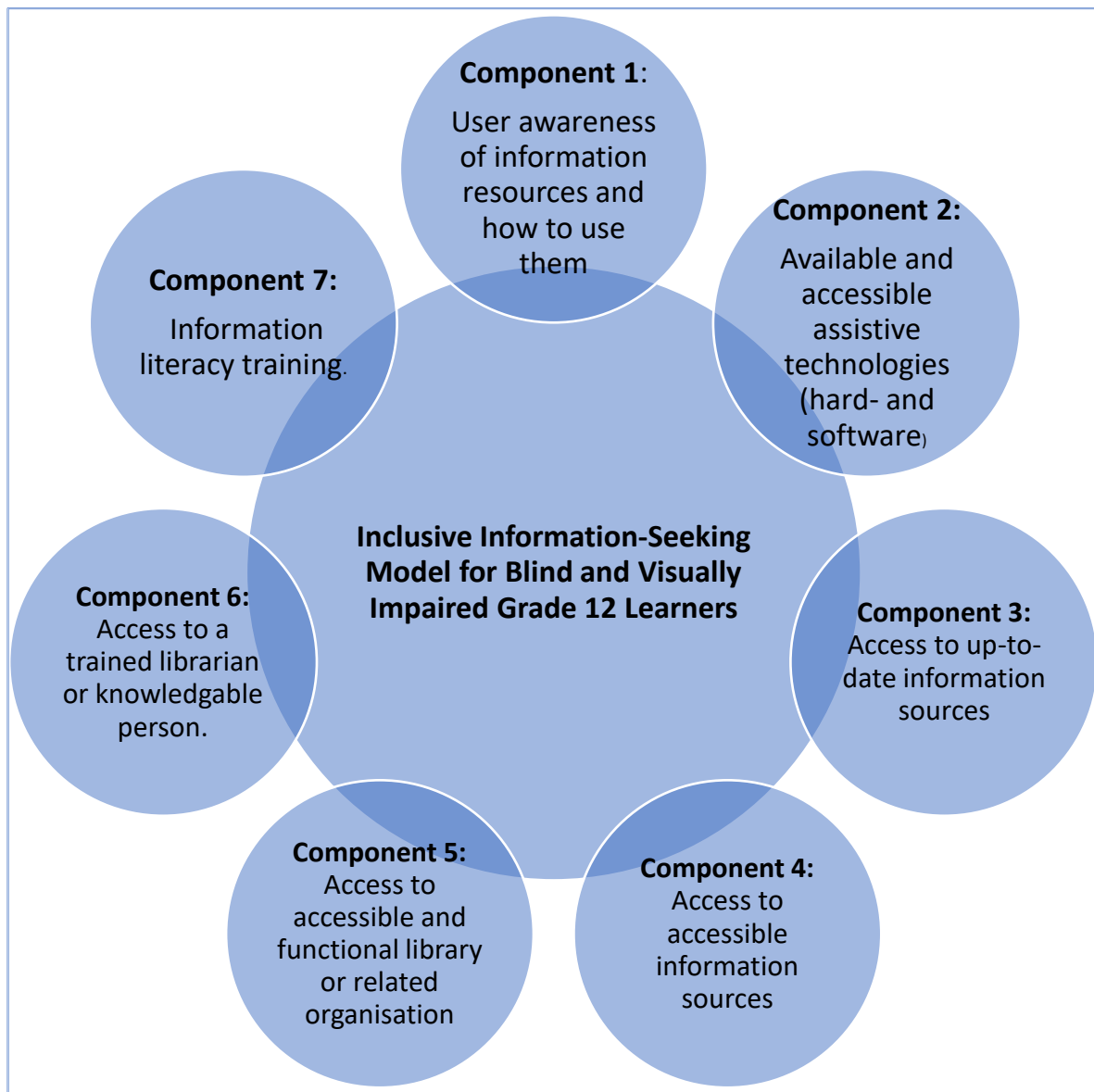
someone about their information needs. The presence of a knowledgeable person to assist is, therefore, crucial to making interaction with information more accessible rather than to struggle with unfamiliar search strategies and or technologies to find information on their own.

6.7.7 Component 7: Information Literacy Training

Although there are many other literacies - Buschman (2009:101) mentions 17 different literacies - the focus of this study is information literacy. The most commonly cited definition of an information literate person is the one adopted by the American Library Association. i.e. "a person who is able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." (Lau, 2006:7). Exposure to continuous information literacy training must be provided by knowledgeable people to empower the visually impaired person to recognise his/her information need and to enable him/her to locate, evaluate, and use the information effectively. Training in new literacies is equally essential. Training must include computer literacy, i.e. understanding information and communication technologies, hardware, and software including the Internet, and media literacy to understand "all of the mediums and formats in which data, information and knowledge are created, stored, communicated, and presented" (Lau, 2006:7).

In conclusion, the numbering of the seven components does not denote any order of priority or sequence. It is merely to make identification between the components more definite. The IISM is graphically represented in Figure 6.3. The model is presented in a circular shape with the blind and visually impaired learner as the central focus. All components are interrelated and influence one another directly or indirectly during the information-seeking process and will have an impact on the blind or visually impaired Grade 12 learner. Thus, the circular shape of the model indicates this dynamic interaction between the various components. It also represents the actual information-seeking process that - depending on the person - is influenced in various ways by the seven components. It is proposed that the seven identified components of the Model are equally applicable to the information-seeking behaviour of other blind and visually impaired people in different contexts. This broader application was not tested in this study, but it is a suggested topic for further research in the final chapter.

Figure 6.3: Inclusive Information-Seeking Model for Blind and Visually Impaired Grade 12 learners



6.8 Research Support for the Proposed Inclusive Information-Seeking Model

In this Section, evidence arising from the research study is provided to give support to the validity of the model generated through this process. In Section 6.6 of this Chapter, four scaffolding components, each with their primary elements, are identified and presented to illustrate how they underpin the development of the Inclusive Information-Seeking Model (IISM). In Section 6.7. seven components of the IISM are identified and discussed. This section

indicates how the various primary elements of the four scaffolding components feed into the proposed IISM:

- i. Concepts of the Conceptual Framework (Section 6.2)
- ii. Information-Seeking Stages (Section 6.3)
- iii. Gap Strategies (Section 6.5), and
- iv. Information-Seeking Principles (Section 6.6.3)

Some of the primary elements link with more than one component of the proposed model. The linkages are shown in summary in Table 6.3.

Diversity and Inclusiveness were identified and described as a strategy to address Gap One in Section 6.5.1 of this Chapter. *Inclusiveness* was also identified and discussed as an Information-Seeking Principle in Section 6.6.3. In Section 6.6.1, the Social Model of Disability was introduced, highlighting the imperative to include people with disabilities in the mainstream of all human activities. The concept of inclusivity emerges from the literature about blind and visually impaired people as an overarching principle which includes accessibility. The importance of inclusiveness is acknowledged and confirmed by incorporating the term in the title of the model, viz. *Inclusive Information-Seeking Model*. It is argued that inclusiveness is the main distinction between the theoretical Information-Seeking Models that have been discussed in this study and the proposed Inclusive Information-Seeking Model (IISM).

Table 6.3: Inclusive Information-Seeking Model: linkages between model components and scaffolding components and elements

Inclusive Information-Seeking Model components (Section 6.7)	Scaffolding Components			
	Information-Seeking Stages (ISS) (Section 6.3)	Concepts of the Conceptual Framework (CCF) (Section 6.2)	Gap Strategy (GS) (Section 6.5)	Information-Seeking Principles (ISP) (Section 6.6.3)
<i>Component 1: User awareness of information resources</i>	ISS 1: Personal context ISS 2: Information-seeking purpose	CCF 1: User awareness of information resources and	GS 3: Orientation and guidance	ISP 1: Diversity

Inclusive Information-Seeking Model components (Section 6.7)	Scaffolding Components			
	Information-Seeking Stages (ISS) (Section 6.3)	Concepts of the Conceptual Framework (CCF) (Section 6.2)	Gap Strategy (GS) (Section 6.5)	Information-Seeking Principles (ISP) (Section 6.6.3)
<i>[Table 6.3 continues from previous page]</i>	ISS 3: Personalised information-seeking behaviour ISS 4: Information source selection/approach	how to use them.		
Component 2: Available and accessible assistive technologies	ISS 6: Information-seeking methodology and application of information	CCF 2: Available and accessible assistive technologies	GS 2: Access and accessibility	ISP 3: Access
Component 3: Access to up-to-date information sources	ISS 4: Information source selection/approach	CCF 3: Access to up-to-date information sources	GS 2: Access and accessibility	ISP 4: Accessibility
Component 4: Access to accessible information sources	ISS 4: Information source selection / approach	CCF 4: Access to accessible information sources	GS 2: Access and accessibility	ISP 4: Accessibility
Component 5: Access to an accessible library or related organisation	ISS 4: Information source selection/approach	CCF 5: Access to an accessible library or related organisation	GS 2: Access and accessibility	ISP 3: Access
Component 6: Access to a trained librarian or knowledgeable person	ISS 4: Information source selection	CCF 6: Access to a trained librarian of a knowledgeable person	GS 4: Assistance of an information professional	ISP 5: Orientation and Guidance ISP 6: Information professional

Inclusive Information-Seeking Model components (Section 6.7)	Scaffolding Components			
	Information-Seeking Stages (ISS) (Section 6.3)	Concepts of the Conceptual Framework (CCF) (Section 6.2)	Gap Strategy (GS) (Section 6.5)	Information-Seeking Principles (ISP) (Section 6.6.3)
Component 7: Information literacy training	<i>ISS 1:</i> Personal context	<i>CCF 6:</i> Access to a trained librarian or knowledgeable person	<i>GS 5:</i> Information Literacy and Guidance	<i>ISP 7:</i> Information literacy

Table 6.3 provides verifiable evidence that the proposed IISM is supported by and based on the four Theoretical Propositions and their related structural elements, thus confirming the validity of the Model.

6.9 Summary

The Information-Seeking Models of Kuhlthau (1991) and Wilson (1999; 2000) and the Information needs model of Moore (2000) were analysed in Chapter 3. This analysis was used in this chapter as a matrix against which to assess the extent to which the models applied to blind and visually impaired Grade 12 learners. Based on the analysis of the models, it was possible to identify six information-seeking stages.

After analysing the results of the interviews conducted with 43 learners from five different Schools for the Blind, seven concepts to be incorporated in the conceptual framework were confirmed. Seven Gaps were identified between the research reported in the literature and the empirical findings, and seven strategies were proposed to address the identified gaps. Seven information-seeking principles were developed based on the strategies to address the Gaps. Four scaffolding components (Stages; Concepts; Gap Strategies and Principles) were used to develop the seven components of the IISM.

The Inclusive Information-Seeking Model developed in this way is consistent with the ideals of the Social Model of Disability which recognises that disabled people and their needs are not a separate entity but an inclusive part of society (Union of the Physically Impaired Against

Segregation, 1976(a)). The information needs of blind and visually impaired learners are therefore integrated into the model to assist information professionals requiring an understanding of information needs in the planning and delivery of library and information services. The IISM provides a broader scope on information-seeking than that described in the Information-Seeking Models from the literature and recognises that the information-seeking needs of blind and visually impaired Grade 12 learners should be equivalent to those of all information seekers. In addition, it is proposed that the IISM is not just applicable to the Grade 12 Learners of the five schools who participated in this study, but could apply to blind and visually impaired people in other contexts. The broader application would need to be researched in the applicable context.

It was noted in Chapter 4, Section 4.5.2 that while small qualitative studies are not generalisable in the traditional sense, they have particular qualities that set them above that requirement and allow the development of findings that are meaningful and can be applied to similar groups (Myers, 2000:1; Beverley, Bath & Booth, 2007: 27; Mason, 2010; Lincoln and Guba, 1985). The particular qualities applicable to this study are:

- i. the fact that one-on-one interviews could be conducted with all the available Grade 12 learners at each school;
- ii. the focus was on how their disability influenced their information-seeking behaviour;
- iii. the interview experience was personal and dynamic meaning that participants could immediately be asked to explain or expand specific responses;
- iv. the interviews took place in an environment that was familiar to the learners, therefore reducing possible stress or uncertainty.

It is proposed that the IISM applies to all the learners of the schools researched in this study. It is suggested that where the schools who participated in the study adhere to the components of the proposed IISM, the learners of those schools may be in a better position when it comes to assisting themselves in their information-seeking processes compared to those learners in schools where many of the components may not be in place.

The IISM provides a planning framework for the management of those schools who participated in this research. It could also serve as planning framework for the Department of

Basic Education in South Africa to ensure that plans and budgets are in place to facilitate the full implementation of all seven components of the Model. The strongest output of implementing the IISM will be an information literate blind and visually impaired learner, and the outcome of that will be a learner who will be able to seek, find and apply information confidently, as applicable. To be information literate will empower the blind and visually impaired learner in the information-seeking environment to move from a situation of exclusion and dependence to a situation of inclusion and independence which will place them on the same level as learners with sight. It will contribute to the dignity and respect of the blind and visually impaired learner as a person with equal rights as enshrined in Article Nine of The Constitution of the Republic of South Africa (Department of Justice and Constitutional Development, 1996:5).

In conclusion, the words of Paul Hunt, an influential disabled writer and activist from Britain and founder of the Union of the Physically Impaired Against Segregation (UPIAS) and editor of the book entitled *Stigma: The Experience of Disability* (Hunt, 1966:158), are still valid today, more than fifty years after the book was published:

"We are challenging society to take account of us, to listen to what we have to say, to acknowledge us as an integral part of society itself. We do not want ourselves, or anyone else treated as second-class citizens and put away out of sight and mind."

Chapter 7: Summary, Conclusion and Recommendations for Further Research

7.1 Purpose of Chapter

In this chapter, a summary of the research is provided as an overview of the study. The summary addresses the research objectives, methods and the findings of the study and assesses the extent to which the study achieved its research objectives. Several conclusions derived from the research process and research findings are highlighted. Finally, suggestions for further research are made as pointers for possible future useful lines of inquiry into information behaviour.

7.2 Summary of Thesis

In Chapter One of this study, Section 1.2.1, one main research objective, was presented. The main objective of this study was to determine to what extent existing information-seeking behaviour models as presented by researchers in the library and information service field apply to the information-seeking behaviour of a group of blind and visually impaired Grade 12 learners when seeking for career information. Although the study considered the information-seeking behaviour research of various researchers, the research of Kuhlthau (1991), Wilson (1999) and Moore (2000) was of particular benefit providing the basis for the theoretical framework guiding and informing the investigation. This aim is explained in Chapter One, Section 1.2. It was planned that the outcome of this research would lead to the generation of an Inclusive Information-Seeking Process (ISP) model, capable of explaining the information behaviour of the Grade 12 learners.

Although it was not the aim of this study, it is suggested that the proposed Inclusive Information-Seeking Model (IISM) could have a broader application for blind and visually impaired people from different backgrounds. It was anticipated that existing ISP models would not fully address the information-seeking behaviour and realities of blind and visually impaired people in general hence the use of the word “inclusive” as part of the name of the proposed model. The word “inclusive” is key since it refers to the inclusion of the information-seeking behaviour and needs of blind and visually impaired people in general and blind and visually impaired Grade 12 learners specifically. This model set out in Chapter 6, Section 6.7, consists of seven different components. The scaffolding components of the model are also

presented in Chapter 6, thus showing that the model's foundation is based on sound theoretical and empirical principles which are surfaced in the study.

The eight secondary objectives were addressed as follows. The importance of assessing the different Information-Seeking Models and related research in a general context was highlighted to provide a broader understanding of the various views of the different researchers on this topic. Chapter 2 provided an overview of the work of various researchers in this field. The focus of each researcher was presented, serving as potential input to consider in the formulation of the IISM. It was also important to examine literature about the information-seeking behaviour of blind and visually impaired people. This review confirmed that there is a scarcity of studies addressing this topic in the research. This finding is strengthening the motivation for the study, viz. to contribute to the research base on blind and visually impaired people and to raise awareness and sensitivity among people with sight about the challenges faced by blind and visually impaired people when seeking information.

It was also found that there are no Information-Seeking Models that address the information-seeking challenges and behaviour of blind and visually impaired learners. The use of Moore's (2000) Information Need model that is based on the information needs of blind and visually impaired people was therefore crucial to this study as the only researched model based on the information needs of blind and visually impaired people. It, therefore, served as a sound point of reference for this study in terms of the career information needs of the Grade 12 learners and to determine the extent of the correlation. This correlation was tested during the empirical part of the research having been built into the research instrument (see Annexure 5). The correlation of Moore's (2000) research with that of the other two major theorists, i.e. Wilson (1999) and Kuhlthau (1991) is presented in Table 3.6.

The fourth secondary objective of the research that was addressed was to determine the information-seeking challenges of blind and visually impaired Grade 12 learners and their influence on their information-seeking behaviour (Reported in Chapter 5, Sections 5.3 and 5.4). One main finding was the unavailability of information sources and assistance during the information-seeking process. Another finding was the inaccessibility of available information sources, viz. digital and print, people, to render assistance and the school library. Regardless of the challenges experienced by this group, it was found that they were still able to find the

information they required to pursue their plans after completing Grade 12. Thirty of the 34 learners who initiated the information-seeking process found the information for which they were looking for despite the challenges they were experiencing.

The secondary objective to determine the impact of the various literacies of the Grade 12 learners on their information-seeking process found that information-seeking was not a problem where a learner was braille literate or literate in the use of technology, e.g. cell phone and the computer to find information. What was less evident was the general information literacy level of the learners. They struggled with identifying their specific information needs, the formulation of the needs, where to find the information that they were seeking and what to do with the information they had found.

Another secondary objective that was formulated was to determine whether there is a difference between the information-seeking behaviour of blind and visually impaired Grade 12 learners from a rural school compared to learners from an urban school; no difference could be detected. Regardless of the location of the five different schools, the learners were on the same level of their information-seeking activities and what they were able to find in terms of career information.

The secondary objective to do a comparative analysis between the models proposed by Wilson (1999), Kuhlthau (1991) and Moore (2000) is addressed in Chapter 3 and specifically in Section 3.7. The comparison found a synergy between the work of the three theorists. The characteristics and similarities of the various stages presented in the models by the three theorists are presented and discussed in Table 3.6, indicating that there is a high correlation which served as a sound foundation for a theoretical framework, and subsequently, the proposed IISM.

The last of the eight secondary objectives were to conduct a gap analysis to compare the findings with the selected Information-Seeking Models. The Gap Analysis is presented in Chapter 6, Section 6.4 showing that seven gaps were identified, and proposing strategies to remedy the gaps. The seven strategies served as a reference in the formulation of the IISM. They are:

- i. diversity and inclusivity;

- ii. access and accessibility;
- iii. orientation and guidance during information-seeking especially concerning language and the formulation of information searches;
- iv. development of information literacy skills;
- v. access to a knowledgeable person such as a professional librarian to assist during the information-seeking process; and finally,
- vi. to make more information available in accessible formats.

In Chapter 6, the scaffolding elements of the Inclusive Information-Seeking Model (IISM) are brought together and discussed. The four scaffolding components are:

- i. the seven concepts of the conceptual framework;
- ii. the six information-seeking stages;
- iii. the seven strategies to address the gaps identified during the Gap Analysis; and
- iv. the seven information-seeking principles.

The analysis of the four scaffolding components in Section 6.6.4 and Section 6.8 led to the conclusion that seven components are defining the IISM, i.e.:

- i. User awareness of information resources and how to use them;
- ii. Available and accessible assistive technologies (hardware as well as software);
- iii. Access to up-to-date information sources;
- iv. Access to accessible information sources;
- v. Access to an accessible and functional library or related organisation;
- vi. Access to a trained librarian or knowledgeable person; and
- vii. Information Literacy Training.

The model is graphically represented in Chapter 6, Figure 6.3, to indicate that the seven components are inter-relational and that the blind and visually impaired learner is the central focus of the model. It is proposed that the model is versatile, i.e. it may have a broader application for other blind and visually impaired people seeking information in different environments. It is accepted that all the components of the model are not directly applicable

to all blind and visually impaired people generally. It is however suggested that the value of the model is that it allows one to extract general principles from applicable component/s to explain the information-seeking behaviour of blind and visually impaired people in different contexts.

7.3 Key Conclusions from the Study and Implications for Practice

The findings of the research presented in Chapter 5, Section 5.4 and the gap analysis discussed in Chapter 6, Section 6.4, lead to five key conclusions which are presented in this Section. These five conclusions are a response to the main research question presented in Chapter 1, Section 1.4.

7.3.1 Interactivity of Information-Seeking Models

It was indicated how information needs (Moore, 2000), information behaviour (Wilson, 1999) and the information-seeking process (Kuhlthau, 1991) are interactive and interdependent models and that the three models present a holistic information-seeking approach. It is concluded from this that the information needs, behaviour and processes should be seen holistically, i.e. all three elements should be addressed to ensure that the information-seeking process is meaningful. It does not mean that the process will lead to success every time, but it will assist the information seeker with how to respond to a failed information-seeking event. The models presented by the three theorists provided a sound point of departure for the development of an Inclusive Information-Seeking Model. The IISM is therefore regarded as adding value to the three models by foregrounding essential dimensions relating to the environment and information-seeking challenges of blind and visually impaired people.

7.3.2 Inclusivity of Existing Information-Seeking Models

People perform Information-seeking. This study presented research and findings, highlighting the challenges faced by blind and visually impaired people. In this study it was determined that the Information-Seeking Models of Wilson (1999) and Kuhlthau (1991) do not conform to the principle of inclusivity, i.e. they do not consider the information challenges experienced by blind and visually impaired people. This exclusion was determined to be one of the major gaps identified through the study (see Chapter 6, Section 6.4.1). Because of the challenges

experienced by blind and visually impaired people when seeking information, it is evident that people are not equal in this process. Information-Seeking Models should, therefore, make provision for this but have failed to do so. The conclusion is that Information- Seeking Models should be developed from the principle of inclusivity. The user studies field described by Wilson (1999:263) puts the user as the central focus. Library and information services are rendered to users or people from all walks of life with different skills and abilities. Libraries and related organisations are about information and people. Information-Seeking Models that are developed to understand the behaviour of users should, therefore, be inclusive of all users or people - or at least an attempt should be made to include all. Alternatively, it should be made clear when and why certain people are excluded from these models, thus clarifying the application of the model and acknowledging the limitation. The importance of inclusivity is recognised as part of the General Principles in the Convention on the Rights of Persons with Disabilities (United Nations, 2006:5).

7.3.3 Accessible Information Resources

As mentioned above, libraries and related organisations are about information resources and the people using those resources. A central finding of this research is that although information is a constant element, the format in which it is presented is not. The Information-Seeking Models of Wilson (1999, Kuhlthau (1991) and to a lesser extent, the research by Moore (2000) do not fully recognise this. Information may be presented in print (braille), electronic, audio, visual or other tactile formats. Various information formats require different skills by the user for the best results and require that various information infrastructures should be in place to make the resources accessible. It is accepted that if a library provides access to electronic databases, that it would make available computer work stations to access those databases.

The same should be true for the formats used by blind and visually impaired people. If information is available in an audio format, then one should expect that the necessary assistive devices should be available to make it accessible. In addition to the necessary equipment, it should also be determined to what extent the information is accessible specifically for blind and visually impaired people. An electronic document is not automatically accessible for a blind and visually impaired person. The conclusion is that

libraries, publishers and organisations creating and presenting content should work together closely to ensure that information resources are accessible and navigable for blind and visually impaired people. The work done by the World Intellectual Property Organisation with regards to the promotion of accessible publishing through the Charter for Accessible Publishing serves as a good example (World Intellectual Property Organisation, n.d.).

A further conclusion is that assistive devices and equipment were lacking in the schools in the study and that libraries and related organisations should work with blind and visually impaired people to ensure that appropriate technologies are available in the library.

7.3.4 Training of Blind and Visually Impaired People

After presenting the theoretical and empirical research findings, it was concluded that successful information-seeking is dependent on a trained user who knows what he/she wants and how to address their information need. This conclusion foreshadows two focus areas of training. The one is training the user on how to use the library, its technologies and various available library resources. The second focus area is narrowly related to the first but is focused on information literacy training. The investigation found that the Grade 12 learners had a low level of information literacy due to low exposure to information sources, libraries and information professionals to assist them. Information literacy training will assist in addressing this lack. This training refers to the training of the blind and visually impaired person to become familiar with his/her information needs, how to define them, how to find, evaluate and use information. This information literacy training should be adapted to the realities of blind and visually impaired people. The training should take cognisance of the non-availability of certain information sources in accessible formats; and that assistive devices and technologies to interact with information require specific skills usually falling outside the ambit of conventional information literacy training programs.

To make information and information technologies available does not imply that people will be able to use the technologies to find, understand and apply the information. Training, guidance and assistance are required to make that possible. For blind and visually impaired people, this is even more important to enable them to function independently in the library and to protect their right to privacy and dignity.

7.3.5 The Blind and Visually Impaired Learner as Innovative Information Seeker

Despite challenges with the unavailability of information in accessible formats or only available in print, 30 of the 34 learners who had started seeking information about their career, found the information for which they were looking. The conclusion is that they were resourceful and not reluctant to explore all options to obtain the information for which they were looking. They were not held back by their visual impairment during the information-seeking process. The fact that the Grade 12 learners found information with limited support and resources available to them is an indication that receiving training would contribute to their confidence and independence as an information seeker.

7.4 Suggestions for Further Research

The focus of this research was on Information-Seeking Models and their applicability to the situation of blind and visually impaired Grade 12 learners seeking career information or information about career options to pursue after completing Grade 12. Three distinct research areas emerged from the empirical findings as worthy of further research. Where this research is considered it is strongly suggested to involve blind and visually impaired people in the design of the research as well as to involve them in conducting the research. This will add to the user focus of the research and to be responsive to the information needs of blind and visually impaired people. This consideration may raise the interest in and the relevancy of the research for the target group.

One research area is how to improve the learning environment for blind and visually impaired learners to prepare or assist them in their decisions about career options after completing Grade 12. The second research area is that of investigating how the visually impaired learner can be better prepared to seek information. The third research area addresses the limitation of this study which is about information seeking models used as reference in this study and the number of learners and schools who participated in the study. These two potential limitations may affect the result of this study which is the broader applicability of the IISM. It is therefore proposed that the broader applicability of the proposed IISM should be tested with groups of blind and visually impaired people in different environments. It should be noted that the focus of this study was on the information seeking behaviour of Grade 12 learners at Schools for the Blind. The proposed IISM that emerged from this study is therefore

mainly applicable to learners and schools who participated in this study. A possible broader application of the IISM is a secondary application. This research involved five of the 13 qualifying Secondary schools where Grade 12 blind and visually impaired learners are accommodated. The reason for the selection was discussed in Chapter 4, Section 4.5.2. It is therefore not suggested that the findings at the schools who participated are generalisable to all Secondary Schools for the Blind in South Africa as pointed out in Chapter 6, Section 6.9. However, it is suggested that there might be lessons that can be drawn from the study of such schools. These recommendations are amplified in the following three sections.

7.4.1 Career Counselling

It became clear during the interviews with the Grade 12 learners that there was no formal career counselling classes or teachers available to provide career counselling to the learners. Of the 34 learners who had initiated information-seeking, 17 of them approached a teacher to assist them with their career-related information-seeking. One would have expected a higher number of learner/teacher interactions because the learners engage with teachers daily. During the interviews, it became apparent that the learners were looking for guidance and advice on career options with everything that goes with seeking information to the evaluation of options. Although the 34 learners identified 14 different career options they intended to pursue, this does not imply that they were aware of a wider choice of all career options. Being blind or visually impaired does not mean that career options are limited but it remains a factor to consider. The American Foundation for the Blind (n.d.) is clear on the fact that blind and visually impaired learners are interested in and able to do the same job as sighted learners and that there is not a separate list of careers only for blind and visually impaired people. Visually impaired job seekers approach the topic in the same manner as sighted learners - that is to pursue careers based on their skills, abilities, interest and values. It, therefore, suggested that research be done on career counselling and training for blind and visually impaired learners through a holistic approach, i.e. to investigate practical and theoretical information and experiences both in school and outside school premises. Learners should be exposed to opportunities offered by career choices and not limited by their blindness or visual impairment. The role of a full-time teacher to assist and guide learners should be researched. The research should establish several aspects. One aspect should be how this teacher could add value to the guidance and advice he/she is providing through

collaboration with external organisations such as tertiary institutions, the Department of Higher Education and Training, the Department of Labour, the South African National Council for the Blind, the South African Qualification Authority and related organisations.

7.4.2 Information Literacy Training

Information Literacy was identified as one of the components of the Inclusive Information-Seeking Model (IISM), viz. Chapter 6, Section 6.7.7. It is a key component without which information-seeking would be very difficult if not impossible. It was clear from the responses of the learners that they were lacking in all the components associated with an information literate person as described in the definition of the American Library Association (Lau, 2006) as a person recognising when he/she need information enabling him/her to:

- i. locate,
- ii. evaluate and
- iii. use information effectively.

The above attributes were not evident in all the learners. Even the learners who had made good progress with their information-seeking process would still have been able to benefit from training in Information Literacy. What is suggested with further research in this context is to consider how information literacy should be addressed in the information environment of a blind learner where there are limited information resources and options. The research should investigate in what way (if necessary) the Information Literacy approach should be adapted in certain areas to address specific challenges and realities faced by blind and visually impaired people. The proposed research should draw on two fundamental human rights enshrined in both International Law, i.e. the Universal Declaration of Human Rights adopted by the United Nations (2015) and in the Constitution of the Republic of South Africa specifically (Department of Justice, 1996). The first right confirms that all people are equal (Article 1 of the Universal Declaration and Section 9 of the Constitution) and secondly that all people have a Right to Human Dignity (Preamble and Article 1 of the Universal Declaration and Section 10 of the Constitution). The proposed research should investigate how to create an equal information environment where blind people have the necessary information-

seeking skills, technologies and resources to locate, evaluate and use information independently without any barriers, thus complying with these two Constitutional rights. The proposed research could then investigate how such an equal information environment will contribute to the human dignity of blind and visually impaired people. The aim should be to create an information environment where blind and visually impaired people will be able to access and use the information on the same level as all other South African citizens and where they can match their abilities with available opportunities to exercise their freedom of choice.

7.4.3 Broader Implication of the Inclusive Information-Seeking Model

The Inclusive Information-Seeking Model (IISM) is a result of focusing the research on the information-seeking behaviour of blind and visually impaired Grade 12 learners. A potential limitation of the research is that it considered three theoretical information-seeking and needs models and compared the resultant theoretical framework with the empirical research findings based on interviews with 43 blind and visually impaired Grade 12 learners at five schools for the blind. The reasoning for the selection of the three models was addressed in Chapter Three, Section 3.1 and the typical nature of small sample sizes when researching blind and visually impaired people is discussed in Chapter Four, Sections 4.5.2 and 4.5.3. These two aspects may be regarded as limitations for this study and the broader applicability of the IISM which is the result of this study. It is safe to say that the seven components of the IISM are applicable to the Grade 12 learners interviewed at the schools who participated in this study. It may apply to other Secondary Schools for the Blind in South Africa where the circumstances are similar. This should be investigated through further research and expanding the scale of the survey to include the remaining Secondary Schools for the Blind in South Africa that was not part of this research. It is also suggested that further research should be done on the applicability of the IISM in different information environments and with different groups of blind and visually impaired people and larger samples if possible. Some of the following environments and groups are suggested, but research should not be limited to the four suggestions below:

- i. Students at tertiary institutions (a target group could be first-year students or final year students);

- ii. Employed blind and visually impaired people in specific working environments or their general living environments;
- iii. Unemployed blind and visually impaired people in their living environment, and
- iv. Senior blind and visually impaired people in their life and social environment.

The seven components of the IISM should be tested with a selected group in a selected environment. The suggested research may conclude that some or all of the seven components should be expanded, reduced, changed or integrated. It is also possible that the definition of the existing components may change depending on the realities of the group and their operating environment. Testing the IISM in this manner will also expand the understanding of inclusivity by making sure the model has a broader application for blind and visually impaired people.

7.5 Conclusion

The final chapter of this study presented a summary of the research to indicate to what extent the research objectives were achieved. Five high-level conclusions were presented that emanated from the study, viz. the interactivity of the information-seeking process, inclusivity, accessibility of information resources, training of blind and visually impaired learners and capitalising on the innovativeness of the information-seeking strategies of blind and visually impaired learners. These five conclusions provide a setting for teachers and Principals of the Schools for the Blind, officials at the National Department of Basic Education and library and information professionals to consider when planning for an inclusive information-seeking environment.

Three areas for further research were proposed that would add value to the IISM in a broader context. Blind and visually impaired people are not restricted to specific groups or environments. They live their daily lives like all other people with the exception that they must make sense of their living environment as a blind person. The broader applicability of the model is therefore proposed to raise awareness of what needs to be done to ensure that the information-seeking experience of the blind and visually impaired person is on an equal basis as it is for the rest of the population. This equality may contribute to the independence and confidence as blind and visually impaired information seekers and users.

Finally, in Chapter Six, Section 6.8 “inclusivity” is highlighted as one of the overarching principles of this study. The point is made that inclusiveness is the main distinction between the theoretical Information-Seeking Models discussed in this study and the proposed IISM. To expand on this principle, it is crucial for planners who want to improve the lives of blind people in the information environment, specifically to include blind people in that process. The slogan “nothing about us without us” is essential here (Charlton, 1998:3). It was first mentioned at an international disability conference and adopted as a slogan by the Disabled People South Africa driving disability rights in the country. The slogan demands that no initiative, policy or practice regardless of good intentions and outcomes should be undertaken without the involvement of disabled people (Charlton, 1998:3). The Inclusive Information-Seeking Model is based on the participation and contributions of blind and visually impaired Grade 12 learners. It is therefore vital for planners considering taking the model further as a test case and ultimately towards implementation in any form, to include blind and visually impaired people in the planning of the implementation. It is only blind people who can articulate their information-seeking challenges in the best possible way. The successful implementation of the model is based on the partnership between blind and visually impaired people and information professionals.

References

- Adetoro, N. 2010. Reading interest and information needs of persons with visual impairment in Nigeria. *South African Journal of Libraries and Information Science*. 76(1):49-56.
- Al-Suqri, M.N. 2013. Information-seeking behaviour of social science scholars in developing countries: A proposed model. *The International Information & Library Review*. 43(1):1-14.
- American Foundation for the Blind. n.d. No Limits Employment. Available: <https://www.afb.org/research-and-initiatives/employment/no-limits-employment> [2018, June 5]
- Archer, L. Maylor, U. Osgood, J., & Read, B. 2005. Final Report: An exploration of the attitudinal, social and cultural factors impacting year 10 students' performance. London: Institute for Policy Studies in Education. Available: http://www.londonwest.org/images/IPSE_Report.pdf [2016, May 8].
- Arditi, A. & Rosenthal, B. 1998. Developing an objective definition of visual impairment in vision 96: *Proceedings of the International low vision conference*. ONCE pp. 331–334 Available: <http://www.encyclopedia.thefreedictionary.com/visual-impairment> [2019, December 6].
- Australian Library and Information Association. 1998. Guidelines on library standards for people with disabilities. Available: <https://www.alia.org.au/about-alia/policies-and-guidelines/alia-policies/guidelines-library-standards-people-disabilities> [2018, August 3].
- Babalola, Y.T & Yacob, H. 2011. Library and Information Services to the Visually Impaired – The Role of Academic Libraries. *Canadian Social Science*. 7(1):140-147.
- Babbie, E. & Mouton, J. 2002. *The practice of social research*. Belmont, CA: Wadsworth Group.
- Balley, S., Bucher, B., Petrelli, D., Ruas, A., van Kreveld, M., Sanderson, M. & Sester, M. 2004. User Requirements Specification Reassessment. Available: http://www.geospirit.org/publications/SPIRIT_WP7_D3.pdf [2016, May 8].
- Bandura, A. 1997. *Self-Efficacy: The Exercise of Control*. New York: W.H. Freeman.
- Bates, M.J. 2002. Toward an Integrated Model of Information-Seeking and Searching. *New Review of Information Behaviour Research*. 3:1-15.
- Bates, M.J. 2010. Information Behavior. In *Encyclopedia of Library and Information Sciences*, 3rd Ed. Marcia J. Bates and Mary Niles Maack, Eds. New York: CRC Press. 3: 2381-2391.
- Bates, M.J., Wilde, D.N. & Siegfried, S. 1995. Research practices of humanities scholars in an online environment: The Getty Online Searching Project Report No.3. *Library & Information Science Research*. 17(1):5-40.
- Belkin, N.J., Oddy, R.N. & Brooks, H.M. 1982. ASK for Information Retrieval: Part I: Background and Theory. *Journal of Documentation*. 38(2): 61-71.
- Belkin, N.J. & Vickery, A. 1985. Interaction in information systems. *Library and Information Research Report*, 35, London: The British Library.

- Beverley, C., Bath, P.A. & Booth, A. 2004. Health information needs of visually impaired people: a systematic review of the literature. *Health & Social Care in the Community*. 12(1):1-24.
- Beverley, C.A., Bath, P.A. & Barber, R. 2007. Can two established information models explain the information behaviour of visually impaired people searching health and social care information? *Journal of Documentation*. 63(1):9-32.
- Bishop, D. & Rhind, D.J.A. 2011. Barriers and enablers for visually impaired students at a UK Higher Education Institution. *The British Journal of Visual Impairment*, 29 (3), 177-195.
- Blessinger, K. & Frasier, M. 2007. Analysis of a Decade in Library Literature: 1994–2004. *College & Research Libraries*. 68(2): 155-169.
- Blythe, J.M., Coventry, L., Little, L. 2015. Unpacking security policy compliance: the motivators and barriers of employees' security behaviours. *Symposium on Usable Privacy and Security (SOUPS) 2015, July 22- 24, 2015, Ottawa, Canada*. Available: <https://www.usenix.org/system/files/conference/soups2015/soups15-paper-blythe.pdf> [2016, June 12].
- Boman, S. 2006. Post-Secondary Education for Blind and Partially Sighted Students. Master of Arts – Integrated Studies, Athabasca University, Alberta.
- Brazier, H. 2007. The Role and Activities of the IFLA Libraries for the Blind Section. *Library Trends*. 55(4):864:878.
- Brewster, S. 2002. Visualization tools for blind people using multiple modalities. *Disability and Rehabilitation*. 24(11-12):613-621.
- Brophy, P.; Craven, J. 2007. Web accessibility. *Library Trends*. 55(4):950-972.
- Brown, G. and Plenert, G. 2006. Gap Analysis. *Encyclopedia of Management*, edited by Marilyn M. Helms, Gale, pp.319-321. Gale Virtual Reference Library. Available: <http://link.galegroup.com.ez.sun.ac.za/apps/doc/CX3446300119/GVRL?u=27uos&sid=GVRL&xid=bad0b023> [2018, June 4].
- Buckland, S.; Dawson, P. 2007. Household Claiming Behaviour. *Social Policy & Administration*. 23(1):60-71
- Buschman, J. 2009. Information Literacy. "New" Literacies, and Literacy. *The Library Journal*. 79(1):95-118.
- Canadian Library Association. 2016. *Canadian Guidelines on Library and Information Services for People with Disabilities*. Available: http://cla.ca/wp-content/uploads/EC16_03_015_Updated_Cdn_Guidelines_Library_Information_Services_for_People_with_Disabilities-_ECMtg_4mar2016.pdf [2018, August 8].
- Cain, H.M., & Merrill, Z. 2001. Distance education for master's students with visual impairments: technology and support. *Journal of Visual Impairment and Blindness*. 95(9):572.
- Case, D.O. 2002. *Looking for Information: A Survey of Research on Information-Seeking, Needs, and Behaviour*. London: Academic Press.
- Catenazzi, N., Landoni, M. & Gibb, F. 1993. Design issues in the production of hyper-books and visual books. *Alt-J Association for Learning Technology Journal*. 1(2):40-54.

- Charles, N. 2011. *A brief guide to carrying out research about adult social care services for visually impaired people*. National Institute for Health Research. London: School for Social Care Research.
- Charles, S. 2005. Person first, disability second: disability awareness training in libraries. *Library Review*. 54(8):453-458.
- Charlton, J.I. 1998. *Nothing about us without us: disability oppression and empowerment*. Berkeley and Los Angeles: University of California Press.
- Chatman, E.A. 1999. A theory of Life in the Round. *Journal of the American Society for Information Science*. 50(3):207-217.
- Cheadle, B. 2007. A parent's guide to the slate and stylus. Available: <https://nfb.org/images/nfb/publications/fr/fr25/fr07spr18.htm> [2018, March 2018].
- Choo, C.W., Detlor, B. & Turnbull, D. 2000. Information seeking on the web: an integrated model of browsing and searching. *First Monday*. 5(2).
- Clemens, R.G., Cushing, A.L. 2010. Beyond Everyday Life: Information-Seeking Behaviour in Deeply Meaningful and Profoundly Personal Contexts. *ASIST*. 47(1):22-27.
- Council of Ontario Universities. 2013. Understanding Barriers to Accessibility. Available: <https://www.uottawa.ca/respect/sites/www.uottawa.ca.respect/files/accessibility-cou-understanding-barriers-2013-06.pdf> [2018, November 27].
- Cox, R. 2008. *Taking a Blind Bit of Notice in County Durham*. (Research report; Durham Sight Loss Survey Partnership.) County Durham, United Kingdom.
- Craven, J. & Brophy, P. 2003. *Non-visual access to the digital library: The use of digital library interfaces by blind and visually impaired people*. Library and Information Commission Research Report. 145. Manchester: Centre for Research in Library and Information Management.
- Creswell, J.W. 2003. *Research design: Qualitative, quantitative, and mixed method approaches*. Thousand Oaks: Sage Publications, Inc.
- Daisy Consortium. 2018. Daisy Consortium, Vision, Mission and Strategy. Available: <http://www.daisy.org/vision-mission-and-strategy-draft> [2019, January 3].
- Dalton, A.J. and McVilly, K.R. 2004. Ethics Guidelines for International, Multicenter Research Involving People with Intellectual Disabilities. *Journal of Policy and Practice in Intellectual Disabilities*. 1(2):57-70.
- Davies, J.E. 2007. An Overview of International Research into the Library and Information Needs of Visually Impaired People. *Library Trends*. 55(4):785-79.
- Davies, E.J., Wisdom, S. & Creaser, C. 2001. Out of sight but not out of mind: visually impaired people's perspectives of library and information services. Available: <http://www.lboro.ac.uk/departments/lis/lisu/downloads/stvtextonly.doc> [2018, June 10].
- Department of Arts and Culture. 2018. *National Policy for Library and Information Services in South Africa*. Pretoria. Available: <http://www.liasa-new.org.za/wp-content/uploads/2018/06/Draft-4-Final-14-March.pdf> [2018, March 6].

- Department of Basic Education. 2011. *Curriculum and Assessment Policy Statement Grade 10-12 Life Orientation*. Pretoria: Department of Basic Education.
- Department of Justice and Constitutional Development. 1996. *The Constitution of the Republic of South Africa*. Pretoria, Department of Justice and Constitutional Development.
- Department of Social Development. 2015. *White Paper on the Rights of Persons with Disabilities*. Available: http://www.dsd.gov.za/index.php?option=com_docman&task=cat_view&gid=33&Itemid=39 [2018, April 14].
- De Villiers, J. 2019. *Data prices could start falling from next month – here's why*. Available: <https://www.businessinsider.co.za/vodacom-mtn-cell-c-telkom-data-prices-south-africa-president-cyril-ramaphosa-icasa-2019-7> [2019, November 21].
- Dervin, B. 1983. An overview of sense-making research: concepts, methods and results to date. *Paper presented at International Communications Annual Meeting*, Dallas, TX., May 1983. Available: <http://communication.sbs.ohio-state.edu/sense-making/art/art/artdervin83.html> [2016, May 20].
- Dervin, B. 1998. Sense-making theory and practice: an overview of user interest in knowledge seeking and use. *Journal of Knowledge Management*. 2(2):36-46. Available: <https://doi.org/10.1108/13673279810249369> [2018, September 10].
- Dootson, S. 1995. An in-depth study of triangulation. *Journal of Advanced Nursing*. 22(1):183-187.
- Dörk, M. Carpendale, S. & Williamson, C. 2011. The Information Flaneur: A Fresh Look at Information-Seeking. *CHI*. 7-12:1-10
- Douglas, G., Corcoran, C. & Pavey, C. 2009. *Network 1000: visually impaired people's access to employment*. University of Birmingham: Visual Impairment Centre for Teaching and Research (VICTAR). School of Education.
- Duckett, P. & Pratt, R. 2007. The emancipation of visually impaired people in social science research practice. *British Journal of Visual Impairment*. 25:5-20.
- Duffy, M. 2018. Low vision and legal blindness terms and description. Available: <http://www.visionaware.org/info/your-eye-condition/eye-health/low-vision/low-vision-terms-and-descriptions/1235> [2018, February 10].
- Eisenberg, M.B. & Berkowitz, R.E. 1990. *Information Problemsolving: the big six Skills Approach to Library Information Skills Instruction*. Greenwich, CT. Ablex.
- Ellis, D. 1989. A behavioural model for information retrieval system design. *Journal of Information Science*. 15(4):237-247.
- Ellis, D. 1989(a). A behavioural approach to information retrieval system design. *Journal of Documentation*. 45(3):171–212.
- Ellis, D. 1993. Modelling the information-searching patterns of academic researchers: a grounded theory approach. *Library Quarterly*. 63(4):469-86.
- Ellis, D. 2005. Ellis's model of information-searching behaviour. In *Theories of information behaviour*. K E Fisher, S. Erdelez & L. McKechnie, Eds. Medford, New Jersey:

- Information Today (Published for the American Society of Information Science and Technology). 138-142.
- Ellis, D., Cox, D. and Hall, K. 1993. A comparison of the information-seeking patterns of researchers in the physical and social sciences, *Journal of Documentation*. 49(4):356-69.
- Eldridge, L. Ed. 1982. *Speaking out: personal and professional views on library service for blind and physically handicapped individuals*. Washington: National Library Service for the Blind and Physically Handicapped.
- Eskay, M. & Chima, J.N. 2013. Library and Information Service Delivery for the Blind and Physically Challenged in University of Nigeria Nsukka Library. *European Academic Research*. 1(5):625-635.
- Fatima, N., & Kumari, D. 2017. Information-seeking behaviour of Visually Impaired Students in Maulana Azad Library, AMU: A Survey. *Library Philosophy and Practice*. Available: <https://go-gale-com.ezproxy.uct.ac.za/ps/i.do?&id=GALE|A584262910&v=2.1&u=unict&it=r&p=AO NE&sw=w> [2019, December 2].
- Fitzgerald, M.A. 1999. Evaluating Information: An Information Literacy Challenge. *School Library Media Research. Research Journal of the American Association of School Librarians. Vol.2*. Available: http://www.ala.org/aasl/sites/ala.org.aasl/files/content/aaslpubsandjournals/slr/vol2/SLMR_EvaluatingInformation_V2.pdf [2018, June 10].
- Forbus, R. & Gomes, S. 2009. Physical Challenges and Disabilities. *The Doctors Are In*. Elected Standing Committee on Teaching Diversity. Association for Education in Journalism and Mass communication. Available: <http://www.aejmc.com/home/wp-content/uploads/2010/12/Physical-Challenges-and-Disabilities.pdf> [2018, June 5].
- Foster, A. & Ford, N. 2003. Serendipity and information-seeking: an empirical study. *Journal of Documentation*. 59(3):321–340.
- Fourie, I. 2004. A Theoretical model for studies on web information-seeking behaviour In ProLISSA. Progress in Library and Information Science in Southern Africa. Proceedings of the third biennial DISSAnet Conference 28-29th October 2004, Farm Inn, Pretoria, South Africa:67-96.
- Fullmer, S. & Majumber, R.K. 1991. Increased access and use of disability related information for consumers. *Journal of Rehabilitation*. 57:17-22.
- Gale, N.K., Heath, G., Cameron, E., Rashid, S. & Redwood, S. 2013. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology*. 13:117. Available: <http://www.biomedcentral.com/1471-2288/13/117>. [2016, January 6].
- Gerrish, K., Chau, R., Sobowale, A. & Birks, E. 2004. Bridging the language barrier: the use of interpreters in primary nursing care, *Health & social care in the community*. 12(5): 407-413.
- Gissara, D. 2018. *Classroom adaptations for students with low vision*. Watertown, Massachusetts: Perkins School for the Blind. Available:

- <http://www.pathstoliteracy.org/blog/classroom-adaptations-students-low-vision> [2018, August 2].
- Hadar, H.H. 2011. Adopting a “satisficing” model for school performance in students’ views of learning. *Educational Research and Evaluation*. 17(3):193-214.
- Hancock, B., Windridge, K. & Ockleford, E. 2009. *An introduction to Qualitative Research*. The NIHR EM/YH.
- Hardon, A., Hodgkin, C. & Fresle, D. 2004. *How to investigate the use of medicines by consumers*. World Health Organisation and University of Amsterdam. Available: http://www.who.int/medicines/areas/rational_use/Manual1_HowtoInvestigate.pdf [2014, March 9].
- Heylighen, F. 2002. Complexity and Information Overload in Society: why increasing efficiency leads to decreasing control. *The Information Society*. p.1-44. Available: [pespmc1.vub.ac.be/papers/info-overload.pdf](http://www.pespmc1.vub.ac.be/papers/info-overload.pdf) [2016, May 8].
- Hu, C-C, Ho, J-D, Lin, H-C & Kao, L-T. 2017. *Eye*. 31(6):872-877. Available: <https://ncbi.nlm.nih.gov> [2019, November 21].
- Hunt, P. (ed.) 1966. *Stigma: the experience of disability*. London: Geoffrey Chapman.
- Ikoja-Odongo, R. & Mostert, J. 2006. Information-seeking behaviour: A conceptual framework. *South African Journal of Library and Information Science*. 72(3):145-158.
- International Organisation for Standardisation. 1998. ISO 9241-11:1998. Ergonomic Requirements for Office Work with Visual Display Terminals (VDTs), Part 11: Guidance on Usability, International Organisation for Standardisation, Geneva. Available: www.iso.org/iso/catalogue_detail.htm?csnumber=16883 [2018, March 4].
- International Organisation for Standardisation. 2003. ISO/TS 16071:2003 Ergonomics of Human System Interaction: Guidance on Accessibility for Human Computer Interfaces, International Organisation for Standardisation, Geneva. Available: www.iso.org/iso/catalogue_detail.htm?csnumber=30858. [2019, January 8].
- International Organisation for Standardisation. 2008. ISO/TS 9241-171:2008 Ergonomics of Human System Interaction – Part 171: Guidance of software accessibility. International Organisation for Standardisation, Geneva. Available: <https://www.iso.org/obp/ui/#iso:std:iso:9241:-171:ed-1:v1:en>. [2019, January 8].
- Jacob, S.A., & Furgerson, S.P. 2012. Writing Interview Protocols and Conducting Interviews: Tips for Students New to the Field of Qualitative Research. *The Qualitative Report*. 17(42):1-10). Available: <http://www.nova.edu/ssss/QR/QR17/jacob.pdf> [2016, January 4].
- Johnson, J.D. 1997. *Cancer-related Information-Seeking*. Cresskill, NJ: Hampton Press.
- Kadiri, J.A & Adetoro, N.A. 2012. Information Explosion and the challenges of information and communication technology utilization in Nigerian Libraries and Information Centres. *Ozean Journal of Sciences*, 5(1):21-30.
- Kadli, J.H. & Kumbar, B.D. 2013. Library resources, services and information-seeking behaviour in changing ICT environment: a literature review. *Library Philosophy and*

- Practice (e-journal). Paper 951. Available:*
<http://digitalcommons.unl.edu/libphilprac/951> [2014, March 13].
- Kamba, M.A. 2015. A hierarchical modelling of information-seeking behaviour of school teachers in rural areas of Nigeria. *Nigerian Libraries*. 48(1-2):67-94.
- Kavanagh, R. (2005). *Transforming Libraries for the Blind in the Learning Culture of the Information Age: The Role of the International Federation of Library Association (IFLA) and the World Blind Union (WBU)*. Melbourne: World Blind Union. Fifth General Assembly Information. Available:
http://cnib.ca/eng/national/wbu/wbu_fifth_assembly/speeches/literacy_culture.com [2018, June 3].
- Kavanagh, R. & Christensen Sköld, B. 2005. *Libraries for the Blind in the information age: Guidelines for development*. IFLA Professional Report No.86. The Hague: International Federation of Library Associations.
- Kendrick, D. 2011. Note-taking 101: How blind and visually impaired people capture information. Available:
<https://www.afb.org/afbpress/pubnew.asp?DocID=aw120704> [2018, February 28].
- Kerscher, G. & Fruchterman, J. 2002. The soundproof book: exploration of rights conflicts and access to commercial ebooks for people with disabilities. *First Monday*. Available:
http://www.firstmonday.dk/issues/issue7_6/kerscher [2018, May 10].
- Khapre, S. & Saleem Basha, M.S. 2012. Advancement in Information Foraging Theory. *Intelligent Information Management*. 4:383-389.
- Khochen-Bagshaw, M. 2011. Reading through touch, importance and challenges. *Paper presented at the World Congress Braille 21, 28th to 30th September 2011*. Available:
https://www.researchgate.net/publication/258265976_Reading_through_touch_importance_and_challenges [2018, May 20].
- Kinash, Shelley. (2004). Blind online learners. Available:
http://www.crds.org/contact/faculty_pages/kinash/resources/dissertation.pdf
 [2016, June 4].
- Kingrey, P.K. 2002. Concepts of Information-Seeking and Their Presence in the Practical Library Literature. *Library Philosophy and Practice*. 4(2):1-14.
- Klein, R. 2000. Inhibition of return. *Trends in Cognitive Science*. 4(4):138–147.
- Kleynhans, S.A. & Fourie, I. 2014. Ensuring accessibility of electronic information resources for visually impaired people: the need to clarify concepts such as visually impaired. *Library Hi Tech*. 32(2):368-379.
- Koh, K.2015. Radical change theory: framework for empowering digital youth. *Journal of Research on Libraries & Young Adults*. Available:
<http://www.yalsa.ala.org/jrly/2015/01/radical-change-theory-framework-for-empowering-digital-youth> [2016, February 20].
- Kouroupetroglou, C., Salampasis, M. & Manitsaris, A. 2008. Analysis of navigation behavior of blind users using browsing shortcuts. *New Review of Hypermedia and Multimedia*. 14(2)199-228.

- Krikelas, J. 1983. Information searching behaviour: patterns and concepts. *Drexel Library Quarterly*. 19(2): 5-20.
- Kuhlthau, C. 1991. Inside the Search Process: Information searching from the User's Perspective. *Journal of the American Society for Information Science*. 42(5):361-371.
- Kuhlthau, C.C. 1993. *Searching Meaning: A Process Approach to Library and Information Science*. Norwood, N.J.: Ablex.
- Kuhlthau, C.C. 2008. From information to meaning: confronting challenges of the twenty-first century. *Libri*. 58:66-73.
- Kuhlthau, C.C., Heinström, J. & Todd, R.J. 2008. The "Information Search Process" revisited: Is the model still useful? *Information research*. 13 (4) paper 355. [Online] Available: <http://informationr.net/ir/13-4/paper355.html>. [2016, April, 04].
- Kundu, D.K. 2017. Models of Information-Seeking Behaviour: A comparative study. *International Journal of Library and Information Studies*. 7(4):393-405.
- Kwak, S.J. & Bae, K.J. 2009. Ubiquitous library usability test for the improvement of information access for the blind. *The Electronic Library*, 27(4). 623-639.
- Kwon, N. 2008. A mixed-method investigation of the relationship between critical thinking and library anxiety among undergraduate students in the information search process. *College & Research Libraries*. 69(2):117-130.
- Lacey, A. & Luff, D. (2001). *Trent Focus for Research and Development in Primary Health Care Qualitative Data Analysis*. Nottingham: Trent Focus.
- Lau, J. 2006. *Guidelines on Information Literacy for Lifelong Learning*. International Federation of Library Associations. Available: <https://www.ifla.org/files/assets/information-literacy/publications/ifla-guidelines-en.pdf> [2018, June 12].
- Leckie, G.J., Pettigrew, K.E. & Sylvain, C. 1996. Modelling the information-seeking of professionals: a general model derived from research on engineers, health professionals, and lawyers. *Library Quarterly*. 66(2):161-93.
- Lee, H., Hyun, M. & Baek, J. 2015. Development of consumer health information seeking model through an analysis of social Q&A service.
- Levitt, T 1997. *Clear access. Visually impaired people's access to local government*. London: Local Government Management Board.
- Library Cooperation Council, 2016. *Library Cooperation Council Strategic Action Plan II, Spain, 2016-2018*. Available: http://www.ccbiblio.es/wp-content/uploads/II_Plan_Estrategico_CCB_2016-2018_English.pdf [2018, May 10].
- Lincoln, Y. & Guba, E.G. 1985. *Naturalistic inquiry*. Newbury Park, CA:Sage
- Lucky, A.T. & Achebe, N.E.E 2013. Information service delivery to the visually impaired: a case study of Hope for the Blind Foundation Wusasa, Zaria (Nigeria). *Research Journal of Information Technology*. 5(1), 18-23.
- Mackenzie, N. & Knipe, S. 2006. Research dilemmas: Paradigms, methods, and methodology. *Issues in Education Research*. 16(2):193-205.

- Majyambere, M. 2012. The information needs and information-seeking behaviour of international students at the University of KwaZulu-Natal, Pietermaritzburg campus. MIS thesis. Pietermaritzburg: University of KwaZulu-Natal.
- Masey, H. 1997. *The information and support needs of newly visually impaired people*. London: RNIB.
- Mason, M. 2010. Sample size and saturation in PhD studies in using qualitative interviews. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 11(3), Art. 8. Available: <http://nbn-resolving.de/urn:nbn:de:0114-fqs100387> [2016, February 12].
- Massof, R.W. 2006. Low vision and blindness: changing perspective and increasing success. *Braille Monitor*. Available: <https://nfb.org/images/nfb/publications/bm/bm06/bm0610/bm061005.htm> [2019, November 23].
- Matusiak, K.K. 2006. Information-Seeking Behavior in Digital Image Collections: A Cognitive Approach. *The Journal of Academic Librarianship*. 32(5):479-488.
- McKenzie, P.J. 2003. A model of information practices in accounts of everyday-life information searching. *Journal of Documentation*. 59(1):19-40.
- Meho, L.I. & Tibbo, H.R. 2003. Modelling the Information-Seeking Behavior of Social Scientist: Ellis's Study Revisited. *Journal of the American Society for Information Science & Technology*. 54(6):570
- Melgoza, P., Mennel, P.A. & Gyeszly, S.D. 2002. Information overload, *Collection Building*, 21(1):32-42.
- Mellon, CA. 1986. Library anxiety: A grounded theory and its development. *College and Research Libraries*. 47(2):160-165.
- Merriam-Webster. n.d. Available: <https://www.merriam-webster.com/dictionary/concept> [2018, October 27].
- Meyer, A. & Fourie, I. 2017. Thematic analysis of the value of Kuhlthau's work for the investigation of information behaviour in creative workspaces in academic libraries. *Information Research*, 22 (1). Available: https://repository.up.ac.za/bitstream/handle/2263/62920/Meyer_Thematic_2017.pdf?sequence=3 [2019, January 23].
- Miles, M.B. & Hubermann, A.M. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*, 2nd ed. London, Sage Publications.
- Moore, N. 2000. *The information needs of visually impaired people: a review of research*. London: RNIB.
- Moore, N. 2002. A model of social information need. *Journal of Information Science*. 28(4):297-303.
- Myers, M. 2000. Qualitative Research and the Generalizability Question: Standing Firm with Proteus. *The Qualitative Report*. 4(3/4). Available: <http://www.nova.edu/ssss/QR/QR4-3/myers.html> [2015, June 23].

- Myers, S.A. 1998. "GTAs as Organizational Newcomers: The Association between Supportive Communication Relationships and Information-Seeking." *Western Journal of Communication*. 62(1): 54-73.
- NatCen Learning. 2012. The Framework approach to qualitative data analysis. Available: <https://www.surrey.ac.uk/sociology/research/researchcentres/caqdas/files/Session%201%20Introduction%20to%20Framework.pdf> [2015, June 23].
- National Disability Authority. 2008. NDA Ethical Guidelines for Disability Research: Ethics in disability research. Available: <https://www.spd.dcu.ie/site/research/documents/2008ETHICSINDISABILITYRESEARCH.pdf> [2016, February 12].
- National Disability Authority. 2009. Ethical Guidance for Research with People with Disabilities. Disability Research Series 13. Available: <http://nda.ie/nda-files/Ethical-Guidance-for-Research-with-People-with-Disabilities.pdf> [2019, March 22].
- Ngulube, P.; Mathipa, E.R. & Gumbo, M.T. 2015. *Theoretical and Conceptual Frameworks in the Social and Management Sciences, June 2015*. Pretoria: University of South Africa. Available: https://www.researchgate.net/publication/278961764_Theoretical_and_Conceptual_Frameworks_in_the_Social_and_Management_Sciences [2018, May 8].
- Nicholas, D. 2000. *Assessing Information Needs: tools, Techniques and Concepts for the Internet Age*. London: Aslib, the Association for Information Management and Information Management International.
- Nwafor, M.C. & Chigbu, E.D. 2017. Information Literacy Skills Required by Blind and visually Impaired Students for Effective Information Access in the University of Nigeria, Nsukka. *Library Philosophy and Practice (e-journal)*. 1577. Available: <http://digitalcommons.unl.edu/libphilprac/1577> [2018, July 1].
- Office of the Deputy President. 1997. *Integrated National Disability Strategy*. Available: https://www.gov.za/sites/www.gov.za/files/disability_2.pdf [2018, May 8].
- Oldman, J. 2012. 10 Free Screen Readers for Blind or Visually Impaired Users. Available: <https://usabilitygeek.com/10-free-screen-reader-blind-visually-impaired-users/> [2018, July 28].
- Owen, D. 2007. Sharing a vision to improve Library Services for Visually Impaired People in the United Kingdom. *Library Trends*. 55(4):809-829.
- Oxford Living Dictionaries*. 2016. Oxford University Press. Available: <http://www.oxforddictionaries.com/definition/english/behaviour> [2016, May 23].
- Partington, G. 2001. Qualitative Research Interviews: Identifying Problems in Technique. Edith Cowan University, Research Online. ECU Publications Pre. 2011. Available: <http://ro.ecu.edu.au/cgi/viewcontent.cgi?article=5367&context=ecuworks> [2016, May 12].
- Patton, M.Q. 2015. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. 4th ed. Thousand Oaks, CA.: Sage Publications, Inc.
- Pendleton, V. & Chatman, E.A. 1998. Small World Lives: Implications for the Public Library. *Library Trends*. 46(4):732-751.

- Pettigrew, K.E., Fidel, R. & Bruce, H. 2001. Conceptual frameworks in information behaviour. In: Williams, M.E. (ed.) *Annual Review of Information Science and Technology*. 35. Medford, NJ: Information Today. 43-78.
- Pilch, J.T. 2009. Treaty for Improved Access for Blind, Visually Impaired and Other Reading Disabled Persons. Library Copyright Alliance. Urbana-Champaign, University of Illinois. Available: <http://librarycopyrightalliance.org/storage/documents/brieftvifinalrev101509.pdf> [2018, August 9].
- Pirolli, P. & Card, S. 1999. Information Foraging. *Psychological Review*. 106(4):643-675.
- Polit, D.F & Beck C.T. 2010. Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies*. 47(11):1451–1458.
- Presidency (The). 2012. National Development Plan 2030. *Our future – make it work*. Pretoria: The Presidency.
- Oweugbuzie, A. 2003. Effect sizes in qualitative research: a prologemnon. *Quality & quantity*, 37: 393-409.
- Ratcliff, D. n.d. 15 Methods of data analysis in qualitative research. Available: www.psychsoma.co.za/files/15methods.pdf [2016, February 17].
- Rayini, J. 2017. Library and Information Services to the Visually Impaired Persons. *Library Philosophy and Practice (e-journal)*. Available: <http://digitalcommons.unl.edu/libphilprac/1510> [2018, July 18].
- Raz, N., Striem E., Pundak G., Orlov, T. & Zohary, E. 2007. Superior Serial Memory in the Blind: A Case of Cognitive compensatory Adjustment. *Current Biology*. 17(13):1129-1133.
- Rehabilitation Engineering and Assistive Technology Society of North America (RESNA), 2018. *About RESNA*. Available: www.resna.org/taproject/library/laws/techact94.htm [2019, January,11].
- Ritchie, J. and Spencer, L. (1994), Qualitative data analysis for applied policy research, in Bryman, A. and Burgess, R.G. (Eds), *Analyzing Qualitative Data*, London: Routledge, pp. 173-94.
- Roy, A.W., Dimigen, G., & Taylor, M. 1998. The relationship between social networks and the employment of visually impaired college graduates. *Journal of Visual Impairment & Blindness*. 92(7):423-433.
- Roy, A.W. & MacKay, G.F. 2002. Self-perception and locus of control in visually impaired college students with different types of vision loss. *Journal of Visual Impairment & Blindness*. 96(4):254-273.
- Royal National Institute of Blind People. 2007. *Information is power: How public libraries can empower blind and partially sighted people*. Available: <http://www.rnib.org.uk/Search/Pages/results.aspx?k=libraries&s=All%20Sites> [2014, February 24].
- Rutgers School of Communication and Information. 2013. *Carol Collier Kuhlthau*. 2013. Available: http://comminfo.rutgers.edu/~kuhlthau/information_search_process.htm [2015, March 18].

- Safahieh, H., & Singh, D. 2006. Information needs of international students at a Malaysian University. In C. Khoo, D. Singh & A.S. Chaudhry (Eds.). *Proceedings of the Asia-Pacific Conference on Library & Information Education & Practice 2006 (A-LIEP 2006)*, Singapore, 3-6 April 2006. Singapore: School of Communication & Information, Nanyang Technological University. 479-485.
- Sahib, N.G. 2011. Investigating the information-seeking behavior of blind searchers on the web. Proceedings of HCI – The 25th BCS Conference on Human Computer Interaction, Newcastle Upon Tyne, UK, 4-8 July 2011. Available: https://www.scienceopen.com/collection/BCS_proceedings [2019, December 2].
- Sahib, N.G., Tombros, A. & Stockman, T. 2012. A comparative analysis of the information-seeking behaviour of visually impaired and sighted searchers. *Journal of the American Society for Information and Technology*, 63(2):377-391.
- Saumure, K. & Given, L.M. 2004. Digitally Enhanced? An Examination of the Information Behaviours of Visually Impaired Post-Secondary Students. *The Canadian Journal of Library Science*. 28(2):25-42.
- Savolainen, R. 1995. Everyday Life Information-Seeking: Approaching Information-Seeking in the context of “way of life”. *Library & Information Science Research*. 17(3):259-294.
- Savolainen, R. 2010. Everyday life information-seeking. *Encyclopedia of Library and Information Sciences*. 3rd ed. 1: 1, 2735-2746.
- Schiff, R.A. 2009. Information Literacy and Blind and Visually Impaired Students. *Urban Library Journal*. 15(2):62-72.
- Schreuder, A.M. & Theron, A.L. 1997. *Careers: An Organizational Perspective*. Cape Town: Juta.
- Šehić, S. & Tanacković, S. 2014. Exploration of Information Needs and Academic Library Use of the Blind and Visually Impaired Students in Croatia. *Libraries in the Digital Age (LIDA) Proceedings*, North America, 13, June 2014. Available: <http://ozk.unizd.hr/proceedings/index.php/lida/article/view/158/156> [2016, June 04].
- Sengupta, S.S. 2011. Growth in Human Motivation: Beyond Maslow. *The Indian Journal of Industrial Relations*, 47(1):102-116.
- Seyama, L.G. 2014. Information-seeking behaviour of blind and visually impaired students: a case study of the University of KwaZulu-Natal, Pietermaritzburg Campus, *Mousaion*. 32(1):1-22.
- Sharma, S. 2019. 18 Pros and Cons of audiobooks to help you decide. Available: <https://gladreaders.com/pros-and-cons-audiobooks/> [2018, June 12].
- Siemens, G. 2013. Connectivism: a learning theory for the digital age. Available: http://er.dut.ac.za/bitstream/handle/123456789/69/Siemens_2005_Connectivism_A_learning_theory_for_the_digital_age.pdf?sequence=1 [2016, February 12].
- Simon, C. & Huertas, J.A. 1998. How blind readers perceive and gather information written in braille. *Journal of Visual Impairment and Blindness*. 322-330.

- Singh, K.P., Kumar, M. & Khanchandani, V. 2015. Information Needs and Information-Seeking behaviour of Foreign Students in University of Delhi: A Survey. *International Journal of Knowledge Content Development & Technology*. 5(2): 25-43.
- Site-Wide Problems and Solutions*. 2019. Available: <https://www.afb.org/about-afb/what-we-do/afb-consulting/afb-accessibility-resources/site-wide-problems-and-solutions> [2019, November 24].
- Sloan, M., McPhee, K. 2013. Information-Seeking in Context: Results of Graduate Student Interviews. *Western Libraries Publications, Paper 41*. Available: <http://ir.libuwo.ca/wlpub/41> [2016, May 20].
- Soiferman, L.K. 2010. Compare and contrast inductive and deductive research approaches. University of Manitoba. Available: www.eric.ed.gov/fulltext/ED542066 [2016, January 12].
- South African Library for the Blind Act, No. 91 of 1998. *Government gazette*, 401(19414), 2 November 1998, Cape Town: Government Printer.
- South African Library for the Blind. 2015. Mini-Library Business Plan. Grahamstown: South African Library for the Blind. (Unpublished).
- South African Qualifications Authority. 2012. *Framework for Cooperation in the provision of Career Development (Information, Advice and Guidance) Services in South Africa*. Pretoria: South African Qualifications Authority. Available: http://www.saqqa.org.za/docs/policy/career_development.pdf [2014, January 15].
- Spink, A. 1997. Study of Interactive Feedback during Mediated Information Retrieval. *Journal of the American Society for Information Science*. 48(5):382-395.
- Spink, A. & Cole, C. 2004. A human information behaviour approach to the philosophy of information. *Library Trends*. 52(3):373-380.
- Spink, A. & Cole, C. 2006. Human information behaviour: integrating diverse approaches and information use. *Journal of the American Society for Information Science and Technology*. 57(1):25-35.
- Stuart, B. 2003. *Recommendations for improved Library Service to the blind and low vision community*. Available: <http://students.washington.edu/aliss/silverfish/archive/april2003/stuart.pdf> [2014, Feb 12].
- Surrey Social and Market Research (SSMR). 2009. *Understanding the needs of blind and partially sighted people: their experiences, perspectives, and expectations*. Guildford: University of Surrey.
- Teddlie, C., Yu, F. 2007. Mixed methods sampling: a typology with examples. *Journal of Mixed Methods Research*. 1(1):77-100. Available: <http://www.sagepub.com/bjohnsonstudy/articles/Teddlie.pdf> [2014, March 9].
- The Daisy Planet. 2012. Inclusive Publishing: Conference Exceeds Expectations. June. Available: <http://www.daisy.org/planet-2012-06>.
- Thomas, D.R. 2003. A general inductive approach for qualitative data analysis. *American Journal of Evaluation*. 27(2):237-246.

- United Nations. 2006. *Convention on the Rights of Persons with Disabilities and Optional Protocol*. New York: United Nations.
- United Nations. 2015. Universal Declaration of Human Rights. New York. Available: https://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf. [2019, September 5].
- Union of the Physically Impaired Against Segregation. 1976(a). *Union of the Physically Impaired Against Segregation*. Available: <https://disability-studies.leeds.ac.uk/wp-content/uploads/sites/40/library/UPIAS-UPIAS.pdf> [2018, August 1].
- Union of the Physically Impaired Against Segregation. 1976(b). *Fundamental Principles of Disability*. London: Union of the Physically Impaired Against Segregation.
- University of KwaZulu-Natal. 2004. *Policy on students and staff with disabilities*. Available: <http://www.ukzn.ac.za> [2018, December 12].
- Van Puffelen, C. 2009. *ICT related skills and needs of blind and visually impaired people*, Available: <https://ris.utwente.nl/ws/portalfiles/portal/6557602/Puffelen09ict.pdf> [2019, December 2].
- Verma, P.R. 2016. Making publications accessible for all. Available: www.daisy.org/daisypedia/making-publications-accessible-all [2018, July 14].
- Vuletić, G., Šarlija, T & Benjak, T. 2016. Quality of life in blind and partially sighted people. *Journal of Applied Health Sciences (JAHS)*. 2(2):101-112.
- W3C. 2006. *Web Content Accessibility Guidelines 2.0*. <https://www.w3.org/TR/2006/WD-WCAG20-20060427/Overview.html#contents> [2018, July 30].
- Weigand, M., J. Zylka, and W. Müller. 2013. *Media Competencies in the Context of Visually Impaired People*, in *Worldwide Commonalities and Challenges in Information Literacy Research and Practice*. 2013, Springer. p. 190-197.
- Willetts, G. 1997 *Services for people with visual impairments in Luton - a review report for the social services department*. London: RNIB.
- Williamson, K. 1998. Discovered by Change: The Role of Incidental Information Acquisition in an Ecological Model of Information Use. *Library & Information Research*. 20(1):23-40.
- Williamson, K., Albrecht, A. Schauder, D. and Bow, A. 2002. A Level Playing Field for Internet Opportunities? Issues for Rural and City Blind and Visually Impaired People. *Rural Society*. 12(1):57-71.
- Williamson, K., Schauder, D. & Bow, A. 2000. Information searching by blind and sight impaired citizens: an ecological study. *Information Research*. 5(4). Available: <http://informationr.net/ir/5-4/paper79.html> [2014, March 9].
- Willings, C. 2016. *Teaching students with visual impairments. Accommodations VS. Modifications*. Available: <https://www.teachingvisuallyimpaired.com/accommodations--modifications.html> [2018, August 2].
- Wilson, T.D. 1981. On user studies and information needs. *Journal of Documentation*. 37(1):3-15.

- Wilson, T.D. 1994. Information needs and uses: fifty years of progress? In Vickery, B.C. Ed. *Fifty Years of Information Progress: A Journal of Documentation Review*. London: Aslib. 15-51.
- Wilson, T.D. 1997. Information behaviour: an interdisciplinary perspective. *Information Processing & Management*. 33(4):551-72.
- Wilson, T.D. 1999. Models in Information behaviour research. *The Journal of Documentation*. 55(3):249-270.
- Wilson, T.D. 1999a. *Uncertainty in information searching*. Sheffield: University of Sheffield Department of Information Studies.
- Wilson, T.D. 2000. Human Information behaviour. *Informing Science*. 3(2):49-55.
- Wilson, T.D. 2000(b). 2000. Human Information Behaviour. *Special Issue on Information Science Research*, 3(2):49-55).
- Wilson, T.D. 2006(a). On user studies and information needs. *Journal of Documentation*. 62(6):658-670.
- Wilson, T.D. and Walsh, C. 1996. Information behaviour: an interdisciplinary perspective. Sheffield: University of Sheffield, Department of Information Studies. Available: <http://www.informationr.net/tdw/publ/infbehav/cont.html> [2017, March 2].
- Wolfe, J.M. 2003. Moving towards solutions to some enduring controversies in visual search. *Trends in Cognitive Sciences*. 7(2):70-76.
- Woods, D. 1984. Visual momentum: A concept to improve the cognitive coupling of person and computer. *International Journal of Man-Machine Studies*. 21(3):229-244.
- World Health Organization, 2003. Consultation on development of standards for characterization of vision loss and visual functioning. Geneva: World Health Organization.
- World Blind Union. 2003. Definition of Blindness. Available: <http://www.worldblindunion.org/English/resources/Documents/Definition of Blindness.doc> [2018, December 4].
- World Intellectual Property Organisation. n.d. Charter for Accessible Publishing. Available: <https://www.accessiblebooksconsortium.org/portal/en/charter.html> [2019, September 18].
- World Intellectual Property Organisation. n.d. Summary of the Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (MVT) (2013). Available: https://www.wipo.int/treaties/en/ip/marrakesh/summary_marrakesh.html [2019, December 20].
- World Intellectual Property Organisation. 2013(a). *Historic Treaty Adopted, Boosts Access to Books for Visually Impaired Persons Worldwide*. Geneva. Available: http://www.wipo.int/pressroom/en/articles/2013/article_0017.html [2014, January 12].

- World Intellectual Property Organisation. 2013(b). Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled. Available: http://www.wipo.int/wipolex/en/treaties/text.jsp?file_id=301019 [2018, August 2].
- World Intellectual Property Organisation. 2016. The Marrakesh Treaty – Helping to end the global book famine. Geneva: World Intellectual Property Organisation.
- World Wide Web Consortium, 2017. Standards. Available: <https://www.w3.org/standards/>. [2017, February 3].
- Xaba, M. and Malindi, M. 2010. Entrepreneurial orientation and practice: three case examples of historically disadvantaged primary schools. *South African Journal of Education*. 30(1):75-89.
- Zahra, Y. 1994. *Marketing of the library services for the visually impaired persons*. Paper presented at the National Seminar on Vision for VIPs: Access to information, December 1-3, Kuala Lumpur, Malaysia.

Annexures

Annexure 1: Research information sheet and key terminologies

Date:

Purpose of the study: The purpose of the study is to determine the information-seeking behaviour of blind and visually impaired Grade 12 learners at five School for the Blind, i.e. a school in the Eastern Cape and one in the Western Cape. The information-seeking behaviour as it applies to learners seeking information for their tertiary studies or career after passing Grade 12 will be applicable.

Learner's role: Only Grade 12 Learners of this school will be required for the interviews of this study. Learners will be interviewed individually, and the school may assign an observer to ensure that the Learner's rights are not compromised. Learners will be asked to respond to several questions based on their experience and knowledge. If they are not sure about the questions, they may ask for an explanation. If they do not want to answer a question, they may indicate that. No reason is required.

Voluntary participation: The learner's participation in this study will be voluntary, and no payment is involved.

Time required: The interview duration will be 30 minutes for each participating learner. Only one interview session will be required.

Study location: The interview will take place at a location at the school approved by the Principal of the School.

Confidentiality and minimizing risk: Data will be collected through a semi-structured interview process. Information collected will be assigned a code number for reference purposes only. The list containing the names and code numbers will be used by the researcher only and kept in a safe place. Learners will be encouraged to respond without restriction. They will be allowed to state the names of organisations. Naming people is not encouraged but will be allowed within the context of the answer. During data analysis, the name of the learner or names of people mentioned will not be disclosed. Learner's confidentiality will be protected. There is no anticipated risk in this study beyond that of everyday life.

Recording of the interview: The interview will be recorded. The recordings will be deleted once the authorities have accepted the final thesis of the study at the University of Cape Town.

Withdrawal and responding to questions: the learner may at any time stop and withdraw from the interview process and choose not to give a response to a question without any explanation. If you want to stop doing the study, tell Francois Hendrikz. If you choose to stop before the end of the interview, any answers you already gave will be destroyed. There is no penalty for stopping. If you decide that you do not want your responses to be considered in

the study after the interview, contact Francois Hendrikz or the Principal of your School to inform Francois Hendrikz about your decision. Your withdrawal will only be noted. You may also choose not to respond to specific questions during the interview process. You do not have to provide any reasons for your withdrawal or why you do not want to respond to specific questions.

Benefits: There are no direct benefits to the school or the learner for participating in this research. The study may help us to understand the information-seeking behaviour of Grade 12 learners when seeking for a career or tertiary study options. It may assist the school to consider some of the research findings in the curriculum or to assist learners in future to access to required information.

For further questions about the study, contact:

Francois Hendrikz

Cell number: 082 552 4104

E-mail: f.hendrikz@gmail.com

Annexure 2(a): Letter to the Principal of the School

08 November 2017

Mr/ Ms _____

Principal: School for the Blind

Private Bag _____

(Town)

(Postal code)

Dear Mr/Ms _____

Re: Permission to conduct interviews with Grade 12 learners as part of a PhD study

I am referring to our telephonic conversation a couple of weeks ago about me visiting the School for the Blind towards the end of January 2018 as part of a research project. I am currently the Director of the SA Library for the Blind and a registered PhD student in Library and Information Studies at the University of Cape Town (UCT). The topic of my research is: *The information-seeking process of blind and visually impaired Grade 12 learners in selected South African Schools for the Blind.*

As part of my empirical research, I would like to request permission to conduct interviews with the Grade 12 learners of the School for the Blind to explore their information-seeking behaviours when seeking work or study-related information they would need when completing Matric. I have obtained ethical clearance from the Ethics Committee at UCT for this research (Annexure A). I have also attached an Information sheet providing an overview of the research (Annexure B) as well as a copy of the Interview Protocol (Annexure C). (*Thesis note: To avoid duplication of text in the thesis Annexure C is not reflected here because it is the same as Annexure 4 below.*)

The interviews will be conducted on the school premises after or during school hours as it is convenient for all involved. The participation of the learners will be voluntary. All efforts will be made to ensure the anonymity of the school and the learners. All information provided will be treated with confidentiality during the reporting of the findings. The learners who participate in the research may terminate the interview at any time without any explanation. The questions will be of such a nature that they will not be harmful to the learners or the school, and the interview should not last longer than 20 minutes per learner.

If it is the procedure of your school to seek permission directly from the parents/guardians for me to interview their children, I will supply a Consent Form for them to sign on behalf of their minor children (that is below the age of 18 years). I will also make available the Interview Protocol. Participating learners will also be briefed about the research, and they will be requested to give their assent to participate.

I have provided full contact details of myself and my supervisors at the bottom of this letter. I would appreciate your favourable consideration of my request.

Yours sincerely,



Francois Hendrikz

Researcher: Francois Hendrikz **Supervisors:** Em. Assoc. Professor Mary Nassimbeni

Institution: South African Library for the Blind **Institution:** Library and Information Studies Centre, University of Cape Town

Cell: 082 552 4104

Phone Number: 27 21 650 4546

Email: director@salb.org.za **Email:** mary.nassimbeni@uct.ac.za / connie.bitso@uct.ac.za

Letter - Annexure A: Ethical Clearance from the University of Cape Town

UCTLIS201706-06

12 October 2017

Mr Francois Hendrikz
Library and Information Studies Centre
University of Cape Town

Dear Mr Hendrikz

I am pleased to inform you that ethical clearance has been granted by the Ethics Review Committee of the Library and Information Studies Centre on behalf of the Humanities Faculty of the University of Cape Town for your PhD study entitled: *The information-seeking process of blind and visually impaired Grade 12 learners in selected South African schools for the blind.*

I wish you the very best with your study.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'J. Raju', written in a cursive style.

A/Prof. J. Raju
Chair, Department (LISC) Research Ethics Committee

Letter – Annexure B: Research Information Sheet

This document sets out essential details of the study so that the parent/guardian may be informed before he/she gives his/her consent to his/her minor child participating in the study. It is accompanied by the Interview Protocol, which sets out the detail of the questions to be asked of each learner during the interview. Also attached is the Assent Form to be signed by the learner if they are willing to be part of the research interview.

Researcher: Mr Francois Hendrikz, Director of the South African Library for the Blind

f.hendrikz@gmail.com

phone: 046 6227226

PhD Title: The information-seeking process of blind and visually impaired Grade 12 learners in selected South African Schools for the Blind

Institution: University of Cape Town (UCT)

Supervisor:

Em. A Prof Mary Nassimbeni

Library and Information Studies Centre

University of Cape Town

mary.nassimbeni@uct.ac.za

021-650 3092

Dr Connie Bitso

Library and Information Studies Centre

University of Cape Town

connie.bitso@uct.ac.za

Purpose of the study: The purpose of the study is to determine the information-seeking behaviour of blind and visually impaired Grade 12 learners at five School for the Blind in South Africa. The information-seeking behaviour as it applies to learners' seeking information for their tertiary studies or career after passing Grade 12 will be researched.

Learner's role: Only Grade 12 Learners of each school will be required for the interviews of this study. Learners will be interviewed individually, and the school may assign an observer to ensure that the Learner's rights are not compromised. Learners will be briefed about the research and their role before the interviews. They will be asked to sign an Assent form to confirm that they understand what the research is about and about their rights during the interview. Learners will be asked to respond to several questions based on their information-seeking experience and knowledge. If they are not sure about the questions, they may ask for an explanation. If they do not want to answer a question, they may indicate that. They may also terminate the interview at any stage. No reason is required.

Voluntary participation: The learner's participation in this study will be voluntary, and no payment is involved.

Time required: The interview duration will be 35 minutes for each participating learner. Only one interview session will be required.

Study location: The interview will take place at a location at the school approved by the Principal of the School.

Confidentiality and minimizing risk: Data will be collected through a semi-structured interview process. Information collected from Learners will be assigned a code number for reference purposes only. The list containing the names and code numbers will be used by the researcher only and kept in a safe place. Learners will be encouraged to respond without restriction. They will be allowed to state the names of organisations. Naming people is not encouraged but will be allowed within the context of the answer. During data analysis, the name of the learner, the school or names of people mentioned will not be disclosed. Learner's anonymity will be protected, and confidentiality will be observed. There is no anticipated risk in this study beyond that of everyday life.

Recording of the interview: The interview will be recorded in cases where the learner gives his/her assent. The recordings will be deleted once the authorities have accepted the final thesis of the study at the University of Cape Town.

Withdrawal and responding to questions: the learner may at any time stop and withdraw from the interview process and choose not to give a response to a question without any explanation. If they wish to stop the interview, they will tell Francois Hendrikz. If they choose to stop before the end of the interview, any answers already given will be destroyed. There is no penalty for stopping. If they decide that they do not want their responses to be considered in the study after the interview, they may contact Francois Hendrikz or their Principal of the School to inform Francois Hendrikz about this decision. Their withdrawal will be only noted. The learner may choose not to answer specific questions and need not provide any reasons for their withdrawal or why they do not want to respond to specific questions.

Benefits: There are no direct material benefits to the school or the learner for participating in this research. The study will help us to understand the information-seeking behaviour of Grade 12 learners when seeking career or tertiary study options. It may assist the school to consider some of the research findings in the curriculum or to assist learners in future to access required information and other related resources.

For further questions about the study, contact:

Francois Hendrikz

Cell number: 082 552 4104

E-mail: f.hendrikz@gmail.com

Annexure 2(b): Consent form for Principal of the School

School Name:

Principal identification number:

CONSENT FORM

Title of the research project: Information-seeking behaviour of Grade 12 learners

Name of Researcher: Francois Hendrikz

Tertiary institution: University of Cape Town

Please initial all boxes.

1. I confirm that I have read and understood the information sheet and terminology list dated [DATE] for the above study.
2. I confirm that I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
3. I agree that I am allowing the Grade 12 learners of this school who wants to participate in the interviews voluntarily.
4. I agree that I am aware that each learner will individually sign a consent form to confirm their voluntary participation in this research.
5. I am confident that the rights of the learners will not be compromised in this study and that their confidentiality will be protected.
6. I understand that the participation of the Grade 12 learners of this school is voluntary and that there is no payment involved.
7. I understand that I am free to withdraw the participation of Grade 12 learners of this school at any time the clauses of the consent form are compromised, or the rights of the schools or the learners are compromised.
8. I understand that information collected during this interview will be used in the research study but that the identity of the school or the learners will not be revealed in the study report.
9. I agree that I am aware that the interviews will be recorded and that it will be administered as described in the Information Sheet.
10. I confirm that I have received a signed copy of this Consent Form by the researcher.

Name of School Principal
Signature

Date

Name of Researcher

Date

Signature

Annexure 3: Learner Assent Form

Learner Assent Form

Research topic: The information-seeking process of blind and visually impaired Grade 12 learners in selected South African schools for the blind.

Researcher: Francois Hendrikz

My name is Francois Hendrikz. I am a Doctoral student from the University of Cape Town. I am also the Director of the South African Library for the Blind. I am here to learn about the information-seeking behaviour of Grade 12 learners when seeking career information or information about study options at Tertiary or other Institutions. This information will help me and other librarians to understand your information needs and help us to design better information provision systems. Thank you for taking the time to talk with me today. The Principal of the School has agreed that I may conduct my study at your school. Your Principal of the School is aware of the purpose of the study and received the questions I will be asking during the interview. I have attached the questions in Annexure A to this document as well. The Principal of the School permitted me that you may take part in my research; however, this does not mean that you must take part. You may still decide you would not like to be part of the study.

The purpose of this interview is to learn about your career or study plans for the future and how you find or found the information to assist you to make decisions. I am interested in your experiences seeking the information you need. There are no right or wrong answers. I would like you to feel comfortable saying what you think, feel and what you know. I want to assure you that everything you say will remain confidential and if I refer to anything you have said in my research report or publications; your name and the name of your school will not be used. You may also withdraw at any time during the interview without providing any explanation. I will only record that the interview was terminated for record purposes.

I have chosen your school and four other schools because these schools are suitable for my study. I have asked you to participate because I would like to include all the Grade 12 learners in your school so that I might get a wide range of experiences and views. During the interview, I will ask questions, and I would like your permission to record your answers, using a recording device. The interview may take more or less 30 minutes. I am asking you to sign this Assent Form which confirms that you have agreed to participate and that you understand what the study is about and your role in it.

Is there anything about my project or about the interview you would like to ask me? I am happy to answer any of your questions. I will now read the Assent Form to you, and if you agree, I will ask you to sign the form, which means that you agree to participate and understand the terms of conditions of your participation.

Name of learner: _____ (for record purposes only and will not be disclosed to any other party)

I confirm that (please indicate “Yes” or “No” verbally to each question and I will record your answer):

Francois Hendrikz has explained the purpose of the study, and I understand it.	Yes	No
Francois Hendrikz has explained the purpose of the interview, and I understand it.	Yes	No
I have been invited to ask any questions I might have about the study or the interview.	Yes	No
I know that my School Principal of the School has given consent for me to participate in the interview.	Yes	No
Francois Hendrikz has explained to me that I may withdraw from the interview at any time. If I withdraw, I will not be asked for my reason/s, and I will not be penalised.	Yes	No
The conditions of anonymity and confidentiality have been explained so that I understand that my name will not be revealed and that my answers and comments will remain confidential.	Yes	No
I would like to have a teacher in the room during my interview.	Yes	No
I agree to this interview being recorded.	Yes	No
I give verbal affirmation that I agree to sign the form and that the researcher will also sign and date the consent form.	Yes	No

I hereby give my assent:

Signature of Learner or proxy

Date

Signature of researcher

Date

Annexure 4: Research instrument

School: _____ Learner: _____ Date: _____

Interview Schedule (2nd)

The information seeking process of blind and visually impaired Grade 12 learners in selected South African Schools for the Blind.

The purpose of the interview instrument is to examine the following

- a. The information needs of the learners as described by Moore (2000)
- b. The information seeking process followed by the learners as described by Kuhlthau (1991).

In addition to these two models, I will also draw on insights from the literature, e.g. Wilson (1999) as discussed in sub-section 3.3.3 in the previous chapter.

Hi! My name is Francois Hendrikz, I am a Doctoral student from the University of Cape Town. I am also the Director of the South African Library for the Blind. I am here to learn about the information seeking behaviour of Grade 12 learners when seeking career information or information about study options and Tertiary Institutions. Thank you for taking the time to talk with me today. The purpose of this interview is to learn about your career or study plans for the future and how you find information to assist you to make decisions. I am interested in your experiences seeking the information you need. There are no right or wrong answers, or desirable or undesirable answers. I would like you to feel comfortable saying what you really think, feel and what you know. As you know this interview will be recorded since it is hard for me to write down everything while simultaneously talking with you. I want to assure you that everything you say will remain confidential and if I refer to anything you have said in my research report or publications, your name will not be used.

The following categories and questions have been formulated in line with the above purposes. Where there are multiple response options to respond to, the learner will be asked to indicate which option best applies to him/her

[NOTE: Spaces to capture responses following each question were reduced for the Thesis to provide a compact document. Ample space to capture notes was provided for in the document that was used during the interviews.]

Category 1: General introductory questions:

Questions

1.1 What are your favourite school subjects and why?

1.2 What is your level of blindness?

1.3 How long have you been living with this condition?

1.4 Do you have any other disabilities?

1.5 Which formats do you prefer to receive information in?

Category 2: Access to technology

2.1 Do you have access to computer software and assistive technologies you need to generally find information?

2.2 Do you have your own phone?

YES – go to 2.3/ NO – go to 2.5

2.3 If yes – do you use it to search for any type of information?

YES / NO

2.4 What technological equipment do you use most often when accessing the Internet?

2.5 What types of information do you usually look for when using the Internet on your phone or on a PC?

2.6 How often do you access the Internet via your phone or PC to seek information?	
2.7 Do you need assistance from anybody when using the Internet?	
2.8 If you do find information on the Internet, do you usually find the webpages to be accessible?	
Category 3: Information seeking behaviour questions (General)	
3.1	Have you already decided what you are going to do after completing Grade 12 in terms of study, or work or have you not decided yet?
3.1.1	Study - go to 4.1
3.1.2	Work - go to 5.1
3.1.3	Not decided yet - go to 6.1
Category 4: Information seeking behaviour questions (Study focus)	
4.1 Have you started looking for information about your study choice? YES - go to 4.2 / NO - go to 4.16	
4.2 Which qualification are you considering and why?	
4.3 Which tertiary institution are you considering and why?	
4.4 If you want more information about your study choice what sources of information do you use?	
4.5 Which of the sources of information you have just mentioned helped you the most and why?	

4.6 Did you find the information you were looking for?
4.7 What information have you tried to find about your future studies?
4.8 Once you have found information about your studies (e.g. spoken to people, found information on the Internet or received some brochures) what do you do with it in order to use it or refer to it later?
4.9 Do you generally need assistance with how to apply the information you've found? YES - go to 4.10 / NO – go to 4.11
4.10 If yes – How do people generally respond when you ask them to help you to find or apply the information you have found?
4.11 Are you aware of any organisation/s, specifically set up to assist people with a visual impairment, that may be able to assist you to find information and could you name a few?
4.12 Was there anything from your own background or environment that assisted you to find or prevented you from finding the information you were looking for?
4.13 If you do not find the information you are looking for or you are not satisfied with the information you have found, what do you do?
4.14 Are you confident that you will find the information you are looking for with all the tools available to you?
4.15 Do you have any suggestions on how to make information more accessible to you?

This is the last question for learners who have searched for study related information.

End of interview

4.16 Is there a reason why you have not started to look for study information at this stage?

4.17 Do you anticipate any challenges in finding the information based on prior experience?

4.18 If you have any comments about your information seeking experiences in the past could you please share them (e.g. what helped you or what frustrated you).

This is the last question and for learners who have not yet started to search study related information.

- End of interview -

Category 5: Information seeking behaviour questions (Work focus)

5.1 What work opportunity will you be pursuing next year?

5.2 If you want more information about your work choice what sources of information do you use?

5.3 Which of the sources of information you have just mentioned helped you the most and why?

5.4 Once you have found information about your work (e.g. spoken to people, found information on the Internet or received some brochures) what do you do with it in order to use it or refer to it later?
5.5 Do you generally need assistance with how to apply the information you've found? YES - got to 5.6 / NO - go to 5.7
5.6 If yes – How do people generally respond when you ask them to help you to find or apply the information you have found?
5.7 Are you aware of any organisation/s, specifically set up to assist people with a visual impairment, that may be able to assist you to find information and could you name a few?
5.8 What information have you tried to find about the work you wish to do after school?
5.9 Was there anything from your own background or environment that assisted or prevented you from finding the information you were looking for?
5.10 If you do not find information you are looking for or you are not satisfied with the information you have found, what do you do?
5.11 Are you confident in finding the information you are looking for with all the tools available to you?
5.12 Do you have any suggestions to make information more accessible?
5.13 If you have any further comments about your information seeking experiences in the past please share them.

This is the last question for learners who searched for work related information.

End of interview.

Category 6: Learners who have not decided yet

6.1 What would you say is the main reason for not deciding yet what to do after Grade 12?

6.2 Have you approached any person or organisation for guidance or assistance?

6.3 Have you consulted any information sources to assist you to decide in any way?

6.4 Could you find information or not? (Elaborate)

6.5 Is there anything else you would like to share about your experience when seeking information?

End of interview.

References:

Kuhlthau, C. 1991. Inside the search process: information seeking from the User's Perspective. *Journal of the American Society for Information Science*. 45(5):361-371.

Moore, N. 2000. *The Information Needs of Visually Impaired People. A Review of research for the RNIB*. Acumen, March.

Wilson, T.D. 1999. Models in Information Behaviour Research. *The Journal of Documentation*, June, 55(3):249-270.

Annexure 5 Research instrument – linkages with research and reason for the questions

Researcher: Francois Hendrikz

Title of PhD Study: The information-seeking process of blind and visually impaired Grade 12 learners in selected South African Schools for the Blind

Section 1: General introductory questions:	
Questions	Notes and Motivation
1.1 Could you tell me something more about yourself, e.g. who you are, where you are from; what interests do you have; do you like reading; what do you read?	<i>Links with Wilson: 1. Context of the information need.</i> To put the learner at ease by letting him/her talk about himself/herself.
1.2 What are your favourite school subjects, and why?	<i>Links with Wilson: 1. Context of the information need.</i> To put the learner at ease by letting him/her talk about himself/herself.
1.3 Describe your level of blindness?	<i>Links with Moore: 5. Users (How do needs differ between different groups of people?) and Wilson: 1. Context of information need.</i> To determine whether the level of blindness is a factor in the information-seeking process
1.3.1 Low vision	
1.3.2 Legally blind	
1.4 How long have you been living with this condition?	OPTIONAL. <i>Links with Moore: 5. Users (How do needs differ between different groups of people?) and Wilson: 1. Context of information need.</i> To assess whether those who are living longer with the disability may be more

	skilled with information-seeking compared to those who are still adjusting to it.
1.5 Do you have any other disabilities?	<i>Links with Moore: 5. Users (How do needs differ between different groups of people?) and Wilson: 1. Context of information need.</i> Whether the presence of other disabilities influences the information-seeking process.
1.5.1 Hearing loss	
1.5.2 Physical	
1.5.3 Other	
1.6 In which format/s, do you prefer to receive your information to make it useful to you?	<i>Links with Moore: 6. Mechanisms (Which mechanisms can be used to meet information needs).</i> To identify the preferred format to engage with information.
1.6.1 Audio	
1.6.2 Braille	
1.6.3 Person reading to Learner	
1.6.4 Large print	
1.6.5 Electronic format	
1.6.6 Other formats (specify):	
Section 2: Access to technology	
2.1 Do you have access to the computer software and assistive technologies you need to find	<i>Links with Moore. 6. Mechanisms (Which mechanisms can be used to meet information needs?)</i>

information generally? Just indicate yes or no with the following options	To assess the degree of accessibility of technology and software in their search for information.
2.1.1 the place where you live (home or hostel) -Yes / No	
2.1.2 the classroom where you attend your classes – Yes / No	
2.1.3 the school library – Yes / No	
2.1.4 the computer room at the school or hostel – Yes / No	
2.1.5 any other place you want to name – Yes / No	
2.2 Are there challenges that you have encountered in your use of computer software and other technologies? If yes, please explain.	Optional. To identify barriers created by technology for learners to seek information, e.g. software not available to access or read information.
2.3 Do you have your own phone? Yes / No	Optional. To determine the accessibility of phones as a potential information-seeking device.
2.4 If yes – do you use it to search for information? (Yes / No)	Optional. To determine whether cell phones are used to seek information.
2.5 If no – what do you use it mostly for?	Optional. To find out about the general application of the cell phone if not used for information-seeking.
2.6 Do you access the Internet mostly through your phone or via a PC?	Optional. To find out which technology (phone or the PC) is more accessible to the learner when seeking information.
2.7 What types of information do you usually look for when using the Internet on your phone or a PC?	<i>Links with Moore. 3. Clusters (what do people need information about?)</i>

<p>(Indicate yes or no with the following)</p>	<p>To establish what types of information are searched via phone or PC.</p> <p>Note: The above will be compared by referencing the 8 clusters of information needs as identified by Moore (Chapter 3; Sub-Section 3.3.1 (3).</p> <ol style="list-style-type: none"> 1.The disability condition, its treatment and likely outcome; 2 Benefits and money; 3 General health; 4 Aids and equipment (assistive devices); 5 Housing and accommodation; 6 Mobility; 7 Services and facilities; and 8 Employment, education and training.
<p>2.7.1 Personal Yes / No (If yes, please provide an example)</p>	
<p>2.7.2 School-related Yes / No (If yes, please provide an example)</p>	
<p>2.7.3 General interest Yes / No (If yes, please provide an example)</p>	
<p>2.7.4 Just surfing the Internet to see what is there: Yes/No (If yes, please provide an example)</p>	
<p>2.7.5 Checking activities on Social Media, e.g. FaceBook,</p>	

WhatsApp; Twitter and others) Yes / No (If yes, please provide an example)	
2.8 How often do you access the internet via your phone or PC to seek information?	Optional. To determine the frequency of use of phone/PC to seek information.
2.8.1 Daily?	
2.8.2 A couple of times per week (can you quantify?), or	
2.8.3 A couple of times per month (can you quantify?)	
2.9 Do you need assistance from anybody when using the Internet?	To find out whether there may be barriers to use the Internet as a source of information.
2.10 If you do find information on the Internet, do you usually find the webpages to be accessible? (Yes / No)	To assess the accessibility of webpages.
Section 3: Information-seeking behaviour questions (General)	
3.2 Have you already decided what you are going to do after completing Grade 12 in terms of study, work, or have you not decided yet?	<i>Links with Moore: 1. Function (Why do people need information?); Wilson: 1. Context of the information need; Kuhlthau 1. Initiation.</i> To investigate the information-seeking focus of the learner.
3.2.1 Study [go to question 4.1]	
3.2.2 Work [go to question 5.1]	
3.2.3 Not decided yet [go to question 6.1]	

Section 4: Information-seeking behaviour questions (Study focus)

<p>4.1 Have you started looking for information about your study choice? Yes (go to 4.2) / No (go to 4.20)</p>	<p><i>Links with Kuhlthau: 1. Initiation. Recognise the need for information.</i></p> <p>To find out whether the learner has engaged with any information-seeking activity yet – it may influence responses to further questions.</p>
<p>4.2 Which qualification are you considering and why?</p>	<p><i>Links with Moore: 3. Clusters (What do people need information about?) and Kuhlthau: 2. Selection (Identify and select the general topic to be investigated]</i></p> <p>To establish the focus of learner's information-seeking activity.</p>
<p>4.3 Which tertiary institution are you considering and why?</p>	<p>Optional: To investigate the preferred tertiary institutions.</p>
<p>4.4 If you want more information about your study choice, where do you go to, to find the information? (I am going to provide you with several options, please indicate how applicable it is to you):</p>	<p><i>Links with Kuhlthau 5. Collection (Gather information related to the focussed topic); Exploration and Moore 6. Mechanisms (Which mechanisms can be used to meet information needs.); Agents (who initiate the information activity?)</i></p> <p>To determine how learners, seek information through the various information sources they engage with and the frequency thereof.</p>
<p>4.4.1 Teacher</p>	
<p>4.4.2 Friends</p>	
<p>4.4.3 Parent or guardian</p>	

4.4.4 Library (School; public or other)	
4.4.5 Other adults you trust – give an example	
4.4.6 Search the internet	
4.4.7 Other sources (explain)	
4.5 Which of the sources you are using were/are the most valuable to you?	
4.6 How do you capture this information to use it at a later stage?	<p><i>Links with Kuhlthau 5. Collection (Gather information related to the focussed topic.); Moore, 6. Mechanism (which mechanisms can be used to meet the information need?)</i></p> <p>To determine how the learner captures the information found since note-taking is different for blind and visually impaired people.</p>
4.7 Do you generally need assistance with how to apply the information you have found? Yes (go to 4.8) / No (go to 4.9)	<p><i>Links with Moore, 2. Form (What kind of information do people need?)</i></p> <p>The description by Moore in brackets is misleading since his detailed description makes it clear that it is about the way people acquire information. This question, therefore, will determine in what way learners need assistance to engage with the information found.</p>
4.8 If yes – Do you generally find the people you ask to assist you to find information (select one)	OPTIONAL. To determine possible barriers to access information
4.8.1 Very supportive	
4.8.2 Somewhat supportive	

4.8.3	Not very supportive	
4.8.4	Not supportive at all	
4.9	Are you aware of any of the following organisations that may be able to assist you to find information?	OPTIONAL. To determine awareness of potential information sources. The response may be covered under sub-question 4.4.7 above.
4.9.1	South African Library for the Blind (Yes/No)	
4.9.2	South African National Council for the Blind (Yes/No)	
4.9.3	Disability Units at individual Universities, e.g. UNISA, UCT (Yes/No)	
4.9.4	Any other organisation? (Explain)	
4.10	If you do not find information, what is the main reason for that?	Optional. To determine what potential barriers exist when seeking information generally.
4.11	What information have you tried to find about your studies?	<i>Link with Moore: 3. Clusters; Kuhlthau: 3. Exploration]</i>
4.12	Are there information sources you prefer to use more often than others?	Optional: To establish whether the learner usually consults some information sources routinely and why.
4.12.1	If yes – name one or two of these information resources and why	Expansion of the previous question
4.13	Was there anything from your background or environment that assisted or prevented you from	<i>Links with Wilson: Intervening Variables (supportive or preventive)</i> To determine barriers to access to study-related information.

finding the information you were looking for?	
4.14 Did you find what you were looking for? Yes – go to next question /No – go to 4.16	<i>Links with Kuhlthau. 6. Presentation and Wilson: 6. Information Processing and Use.</i> To determine successful information-seeking and ability to use the information.
4.14.1 Were you able to use the information for your purpose? Go to question 3.21	<i>Links with Kuhlthau. 6. Presentation and Wilson: 6. Information Processing and Use.</i> To determine successful information-seeking and ability to use the information.
4.15 If you do not find the information you are looking for or you are not satisfied with the information you have found, do you reformulate your search question to improve the result for what you were looking for or do you stop searching?	<i>Links with Kuhlthau: 4. Formulation</i>
4.16 What was the reason for not finding what you were looking for?	Optional question: to determine a potential barrier to information-seeking
4.17 What kind of assistance did you receive from other people to find the information you were looking for?	Optional question: to determine a potential barrier to access information quickly.
4.18 Are you confident that you will find the information you are looking for with all the tools available to you?	<i>Links with Wilson: 4. Activating Mechanism – Social Learning Theory]</i>

4.19 Do you have any suggestions on how to make the information more accessible to you?	Optional question: to find practical solutions to barriers experienced by blind and visually impaired learners when seeking information.
4.20 Is there a reason why you have not started to look for study information at this stage?	To determine the reason/s for not yet starting to look for information about study-related information needs.
4.21 Do you anticipate any challenges in finding the information based on prior experience?	To determine potential barriers when seeking information.
4.22 If you have any comments about your information-seeking experiences in the past, please share that. This is the last question and ends the interview.	
Section 5: Information-seeking behaviour questions (Work focus)	
5.1 What work opportunity will you be pursuing next year?	Optional question: to determine the employment area of interest or available.
5.2 How did you decide on this work option?	<i>Links with Kuhlthau 2. Selection.</i> To determine what influenced the decision of the learner
5.3 If you want more information about your work choice, where do you go to, to find the information? (I am going to provide you with several options, please indicate how applicable it is to you):	<i>Links with Kuhlthau 5. Collection (Gather information related to the focussed topic); Exploration and Moore 6. Mechanisms (Which mechanisms can be used to meet information needs.)</i> To determine how learners, seek information through the various

	information sources they engage with and the frequency thereof.
5.3.1 Teacher	
5.3.2 Friends	
5.3.3 Parent or guardian	
5.3.4 Library – School; public or other	
5.3.5 Other adults you trust – give an example	
5.3.6 Search the internet	
5.3.7 Other sources (explain)	
5.4 Which of the sources you are using were/are the most valuable to you and why?	
5.5 How do you capture this information to use it at a later stage?	<p><i>Links with Kuhlthau 5. Collection (Gather information related to the focussed topic.)</i></p> <p>To determine how the learner captures the information found since note-taking is different for blind and visually impaired people.</p>
5.6 Do you generally need assistance with the interpretation of the information or how to use it? Yes (got to 5.7) / No (got to 5.8)	<p><i>Links with Moore, 2. Form (What kind of information do people need?)</i></p> <p>The description by Moore in brackets is misleading since his detailed description makes it clear that it is about the way people acquire information. This question, therefore, will determine in what way learners need assistance to engage with the information found.</p>

5.7 If yes – Do you generally find the people you ask to assist you to find information (select one)	OPTIONAL. To determine possible barriers to access information
5.7.1 Very supportive	
5.7.2 Somewhat supportive	
5.7.3 Not very supportive	
5.7.4 Not supportive at all	
5.8 Are you aware of any of the following organisations that may be able to assist you to find information?	OPTIONAL. To determine awareness of potential information sources. The response may be covered under sub-question 4.4.7 above.
5.8.1 South African Library for the Blind (Yes/No)	
5.8.2 South African National Council for the Blind (Yes/No)	
5.8.3 Disability Units at individual Universities, e.g. UNISA, UCT (Yes/No)	
5.8.4 Any other organisation? (Explain)	
5.9 If you do not find information, what is the main reason for that?	Optional. To determine what potential barriers exist in the school library to find information.
5.10 What information have you tried to find about the work you are going to do?	<i>Link with Moore: Clusters; Kuhlthau: Exploration]</i> Optional: perhaps covered in question 4.1?
5.11 If yes – name one or two of these information resources and why	Expansion of the previous question

<p>5.12 Was there anything from your background or environment that assisted or prevented you from finding the information you were looking for?</p>	<p>To determine barriers to access to study-related information.</p>
<p>5.13 Did you find what you were looking for? Yes – go to next question /No – go to 5.14</p>	<p><i>Links with Kuhlthau. 6. Presentation.</i> To determine successful information-seeking activity and usefulness</p>
<p>5.13.1 If yes – were you able to use the information for your work purpose? Go to question 5.16</p>	<p><i>Links with Kuhlthau. 6. Presentation and Wilson: 6. Information Processing and Use.</i> To determine successful information-seeking activity and usefulness</p>
<p>5.14 If you do not find the information you are looking for or you are not satisfied with the information you have found do you reformulate your search question to improve the result for what you were looking for or do you stop searching?</p>	<p><i>Links with Kuhlthau: 4. Formulation</i></p>
<p>5.15 What was the reason for not finding what you were looking for?</p>	<p>Optional question: to determine a potential barrier to information-seeking</p>
<p>5.16 How much assistance have you received from other people to find the information you were looking for?</p>	<p>Optional question: to determine a potential barrier to access information quickly.</p>
<p>5.17 Are you confident in finding the information you are looking for with the electronic information sources available to you? Yes / No</p>	<p>To determine the confidence level of the learner using the internet or other sources available in digital formats</p>

<p>5.18 Do you have any suggestions to make the information more accessible?</p>	<p>Optional question: to find practical solutions to barriers experienced by blind and visually impaired learners when seeking information.</p>
<p>5.19 If you have any further comments about your experience, please share them.</p>	<p>Optional question: open-ended question to solicit any additional response that may add value to the information-seeking process.</p>
<p>5.20 When looking for study-related information, where would you start and what information sources would you consult?</p>	<p><i>Links with Moore: 4. Agents.</i> To identify the approach planned by the learner when initiating the search.</p>
<p>5.21 Do you anticipate any challenges in finding the information based on prior experience?</p>	<p>To identify potential barriers to information-seeking.</p>
<p>5.22 If you have any further comments about your information-seeking experiences in the past, please share that.</p> <p>This is the last question and ends the interview.</p>	
<p>Section 6: Learners who have not decided yet</p>	
<p>6.1 What would you say is the main reason for not deciding yet what to do after Grade 12?</p>	<p>Optional question:</p>
<p>6.2 Have you sought guidance from:</p> <p>6.2.1 Any teacher or</p> <p>6.2.2 Adult or</p>	<p>Optional question</p>

6.2.3 Organisation about your options? (Elaborate)	
<p>6.3 Have you consulted any information sources to assist you to decide in any way? (Select and explain)</p> <p>6.3.1 Internet – Yes / No</p> <p>6.3.2 Physical resources – Yes / No</p> <p>6.3.3 Other resources – Yes / No</p>	Optional question.
6.4 Could you find information or not? (Elaborate)	Optional question
Is there anything else you would like to share about your experience when seeking information?	To determine whether there is anything else the learner might like to add.

End of interview.

Annexure 6 Framework Analysis: Empirical research - charting of data

Framework analysis category	Data fields	Summary of data results	Comments
1. Information technology and access	1.1 Access to computer software and assistive technologies.	a) Five learners with PCs at home; 38 learners do not have PCs at home.	
		b) 43 learners have access to PCs at school (mostly in a computer lab)	
	1.2 Owning a phone.	43 learners own their phone	
	1.3 Using the phone to seek information	39 learners use their phone to seek information; 4 do not due to limited data.	
	1.4 Phone or PC preference to seek information	21 learners prefer the PC and 22 the phone to seek information.	<p>C2 - "I do not always have data on my phone." C3 - "At school, we are not allowed to be on the Internet without reason. We are only allowed to use the Internet for school work and must tell the teacher what it is we are looking for." C4 - "Most web sites are restricted by the school - if they do not restrict the learners would watch videos and download all sort of stuff." Frustration expressed: by C4: "because you do not always find what you need, but then we cannot search other websites." E1 - "I can spend more time on the phone than on the pc in class." E4 - "sometimes the system at school is not</p>

Framework analysis category	Data fields	Summary of data results	Comments
			functioning or very slow. Sometimes JAWS is not working properly." E7 - "The computer because the screen is bigger."
	1.5 Frequency of using phone or PC.	a) 18 learners use the phone or PC daily.	
		b) 19 learners use the phone or pc a couple of times per week.	
		c) Six learners use their phone or pc a couple of time per month.	Note: it depends on the need to do a school project.
	1.6 Accessibility of webpages	23 learners find webpages accessible - 20 do not or not always accessible.	A3 - "Sometimes the fonts are too small." A6 - "The phone does not show the pages properly." A14 - I find the translation of information into Afrikaans a problem."B8 - "The pages are accessible, but I struggle with reading the screen, which is stressful on my eyes."D2 - "Some pages are accessible, and others are not."E1 - "From time to time, I struggle with a web page, but I mostly find what I am looking for because I type in exactly what I want."

Framework analysis category	Data fields	Summary of data results	Comments
			E7 - "The ads on the webpages are a problem."Note: it takes the learners longer to search because they navigate on a page only to realize they are on a page where they do not want to be. Because of their low vision, they can "see" what is going on and to help themselves to a certain extent. They use Windows Magnifier to enlarge text on the PC screen.
2. Information sources used	2.1 Sources of information	a) 17 learners approach their teacher.	
		b) 19 learners approach a friend.	D3 - I talk to friends who are studying at the University."
		c) 19 learners approach a parent or family member.	
		d) Four learners make use of their school library.	A10 - "The school has a library but not a teacher. We must request a teacher to open the library every time if we want to go to the library." B2 - "The school library has no braille books with relevant information."B4 - "There is no-one at the library, which is mostly closed in any case."

Framework analysis category	Data fields	Summary of data results	Comments
		e) Ten learners approach family members or people they know who is busy with their studies or completed.	
		f) 31 learners use the internet.	D1 - "I search the Internet, and I talk to people who are studying the same degree." D2 - "I use Google to search for everything I want to know."
		g) Groups at school, church, the university, audio sources.	D4 - "I go to the University to find information."
	2.2 Most preferred information source.	23 learners prefer the Internet; 4 prefers the teacher; 1 prefers career expos; 8 prefers family or friends.	B4 - "It is quicker to get the information from the teacher." C2 - "To ask people who have personal experience." C4 - "Google is more accurate." D1 - "Friends and other people because they explain everything." D2 - "The Internet because there is enough information about study and career choices available."
	2.3 Awareness of other information sources, e.g. organisations		
		a) Ten learners are aware of the South African Library for the Blind (heard about the Library).	
		b) Eight learners are aware of the South African National Council for the Blind or heard about it.	Note: Most learners only heard about these institutions but did not know what it offers.

Framework analysis category	Data fields	Summary of data results	Comments
		8 learners are aware of the Disability Units at Universities.	
		No other organisation mentioned by any of the learners.	
3. Information-seeking confidence, purpose and success	3.1 Assistance required when using the Internet.	23 learners require assistance. 11 of these learners qualify their response by saying that they only require assistance "sometimes". 26 learners do not require any assistance. Some learners do struggle more with the software (e.g. JAWS and ZoomText) to navigate the Internet.	C1 - "We try different options until we worked it out or you ask your friend next to you." C2 - "We ask a friend sitting next to you." Note: Learners who do not have the subject Computer Studies are allowed to use the computers during a computer period but then are not allowed to ask the teacher any questions. "We must keep our mouths shut." D4 - "Not at all" E3 - "On the computer, I need some kind of help because I am not that good on the computer." E4 - "Mostly with JAWS because it jumps to different links on the screen and it is difficult to go back to the previous link. If you want to go back, you must start a new search."
	3.2 Assistance required with the interpretation of information found on the Internet.	28 learners require assistance with the interpretation of the information they have found. Six learners do not need assistance.	B8 - "I struggle with the languages and need help with that."

Framework analysis category	Data fields	Summary of data results	Comments
	3.3 Purpose of information-seeking		
		a) One learner indicated seeking information that is personal.	
		b) 36 learners look for school related information	
		c) 22 learners seek information that is general interest based.	D2 - "I really check anything on the Internet." D3 - "I search for anything that I do not understand, or when I have got a task to do." D4 - "I like information about celebrations, news about singers and soccer players and watching videos in general." D8 - "Anything I want to know."
		d) Nine learners use Social Media such as Facebook, WhatsApp	C2 - "We can go onto social media on the school computers, but then you have to do it in a "rogue manner." Note: They purchase individual "bundles of data" to access only their WhatsApp platform.
	3.4 Success when seeking information	30 learners indicated that they are successful. Four learners are not successful, but one learner only started the process, and the other three are in the process of seeking.	C1 - "I look for something but do not always find what I want." E3 - "I generally find something but continue if it is not exactly what I am looking for." E7 - "I sometimes struggle because of the format or the webpage layout."

Framework analysis category	Data fields	Summary of data results	Comments
	<p>3.5 Responsiveness of people when asked by the learner to assist with the information-seeking process.</p>	<p>17 learners indicated that people are willing to assist. Nine learners indicated that people are not too willing to assist or delay the process. Two learners indicated that people are not supportive when requested for assistance.</p>	<p>C2 - "It depends on their availability or what they are busy with." D3 - "They are sometimes busy and can only help you later." E4 - "People at home always say I must check with them later, or they do not want to help me." E6 - "I prefer to do things on my own because people sometimes delay things." E7 - "People are supportive, but if they are busy, then you have to wait." D1 - "They are advising me to go out and research more." D2 - "They help me to find more information and give me forms to apply to those institutions."</p>

Framework analysis category	Data fields	Summary of data results	Comments
	3.6 Learner's response when not able to find the information he/she is looking for.	<p>26 learners rephrase the question or look for other information sources.</p> <p>Three learners ask for help. Two learners try again later, or the next day.</p> <p>One learner terminated the information-seeking process.</p>	<p>C2 - "I ask someone else to assist me."</p> <p>C3 - "I change my search strategy."</p> <p>C4 - "I leave it until tomorrow and then try again."</p> <p>D1 - "I try and find students who graduated and talk to my teachers."</p> <p>D3 - "I start from scratch."</p> <p>D4 - "I keep searching with other means or find something else that would suit me."</p> <p>D6 - "I ask teachers, friends and family that are already done with their studies or are still at University to help me."</p> <p>D7 - "I seek help from other people or use another webpage on the Internet."</p> <p>E4 - "Sometimes I just drop it and give up hope after trying four or five times. Teachers are available, but they are busy with exam papers and I therefore not bother them."</p> <p>E5 - "I change the question to check the word to see if it is correctly spelt."</p> <p>E6 - "I use different terms to see what comes up."</p> <p>E7 - "I leave it until tomorrow; talk to people and then try again."</p>

Framework analysis category	Data fields	Summary of data results	Comments
	3.7 Confidence of learners in their information-seeking abilities.	30 learners indicated that they are confident with the information-seeking process. Five learners are uncertain (one learner mentioned uncertainty about using the Internet, three others indicated that it all depends on the nature of the information they are seeking.)	B7 - "Not too sure, but if a person helps, it would be possible." C3 - "If there is a magnifier for the text on the screen or a device to enlarge the printed text, everything is fine." D8 - "Sometimes, I am not sure." E3 - "It depends what information I search for - sometimes it is easy, but sometimes I cannot find anything." E5 - "It depends what information I am looking for - sometimes it is difficult to find anything."
4. Information-seeking process	4.1 Preferred reading formats	a) Audio - six learners	
		b) Braille - ten learners.	
		c) Person reading to the learner - two learners	
		d) Large Print - 31 learners	C3 - "and good light on the paper."
		e) Electronic format - three learners.	
	4.2 Decision about what to do after completing Grade 12.	a) Study - 39 learners. b) Start a job - No learners. c) No decided yet – Four learners	
	4.3 Initiation of the information-seeking process	a) 34 learners started the process. b) Five learners have not started the process.	

Framework analysis category	Data fields	Summary of data results	Comments
	4.4 Type of qualification	<ul style="list-style-type: none"> a) Law - six b) Psychology - two c) Social Welfare - four d) Business, Economics and Administration - five e) Journalism, Media and Marketing - three f) Sound engineering - one g) IT - one h) Teacher - one i) Hospitality - one j) Tourism - one k) Drama - one l) Sports administrator - one 	
	4.5 Type of information sought.	<ul style="list-style-type: none"> a) What does it involve and what are the requirements? b) Whether personality suits the chosen career. c) What type of subjects are involved? d) Period of study. e) Where can one study the chosen career? f) When classes start and the application process. g) Is the career suitable for a blind person? h) Comfortable to do the job. i) Which business to approach to talk about chosen career. j) What support is available to study for blind people? k) What type of qualifications are there? 	

Framework analysis category	Data fields	Summary of data results	Comments
		l) Who to approach to provide more information about study choices. m) What is the nature of the job? n) Accommodation options. o) Availability of bursaries. p) What points are required to qualify for the study?	
	4.6 Administration of information after finding it.	a) Print-out and file - 15 b) Write notes and file - Seven b) Save electronically - One c) Save to phone - One d) Memorise - Six	

Framework analysis category	Data fields	Summary of data results	Comments
	4.7 Was there anything from your background or environment that assisted or prevented you from finding the information you were looking for?	<ul style="list-style-type: none"> a) Not sufficient data. b) The dangerous area where learners live due to gangs. c) Eyes hurt after looking at screens too long. d) Frustrated because the learner cannot always find all the information. e) People are not aware of the challenges faced by sight impaired people. f) Paying for the internet is a barrier because learners do not have money to buy data. g) The assistance of an adult is welcomed during information-seeking. h) Tools such as magnifiers are helping to see text and with less strain. i) Some learners showed ambition and determination by saying no-one is preventing them to pursue the dreams. j) Some families assist the learner with the information-seeking k) Time is limited to seek information. l) Slow WiFi at school. m) JAWS not working 	<p>C1 - "I am fine with how I find information." C2 - "Paying for the Internet is a barrier because I do not have money to buy data." C3 "It helps if an adult is around to assist sometimes." C4 - "The availability of a magnifier to see text more easily is helping a lot." D3 - "No-one prevents me from following my dreams." D6 - "Not enough time to do information-seeking." D7 - "Not enough data because it is expensive to use my phone." E3 - "Sometimes when you want to do something and JAWS does not want to work. My phone helps me most of the time, but the data is expensive." E4 - "JAWS should be working." Note: Slow WiFi and expensive data are barriers.</p>

Framework analysis category	Data fields	Summary of data results	Comments
	4.8 Suggestion to improve the information-seeking process.	<ul style="list-style-type: none"> a) Enlargement function on screens. b) School to allow more time and opportunities to discuss career options. c) Too many links on webpages create confusion. d) Websites to be regularly updated. e) Background of the website not contrasting enough adjust fonts / bold text is helpful. f) School library to be open with up to date information sources. g) To never give up trying when seeking information. h) More information available in Braille. i) A person in the Library to assist. j) The library should have brochures about career choices in an accessible format. k) JAWS available on all PCs. l) More data to use the Internet more. m) A better understanding of the Internet to improve searching. n) Talking to people who are studying or have studied what the learners are interested in because these people have first-hand knowledge to assist the learners. o) A library in town with braille books and computers to do searches 	

Framework analysis category	Data fields	Summary of data results	Comments
		<p>if especially when personal cell phone data is limited.</p> <p>p) Information in audio would assist.</p>	
	<p>4.9 Reason for not starting information-seeking about career choices.</p>	<p>Five learners have not started the information-seeking process.</p> <p>a) Two learners indicated their visual impairment as a reason.</p> <p>b) One learner could not provide a reason.</p> <p>c) One learner was waiting for the results of Grade 11 and said that the school work is demanding.</p> <p>d) One learner mentioned having many other responsibilities.</p>	
	<p>4.10 Anticipation of challenges for those learners who have not started the information-seeking process.</p>	<p>a) Four learners anticipate no challenge.</p> <p>b) Learners mentioned that people are busy, and they may not want to help or there are so many students applying which may make it difficult to find the information.</p>	<p>E1- "People are busy, and they may not want to help, or there are so many applying which may make it difficult to find information."</p>

