

INFORMATION SEEKING BEHAVIOUR OF STUDENTS WITH
VISUAL IMPAIRMENTS: A CASE STUDY OF THE UNIVERSITY
OF KWAZULU-NATAL, PIETERMARITZBURG

by

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DECLARATION

I, Lungile G. Seyama declare that

(i) The research reported in this dissertation, except where otherwise indicated, is my original work.

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Christine Stilwell Professor.....Date:.....

Craig Morris.....Date:.....

Dedication

This thesis is dedicated to the one and only true God for carrying me through the courses and for giving me the strength and grace I needed to press on regardless of the situation. To the wonderful family God gave me, Samuel SBN my husband and our beautiful daughters Lindelwa Bongekile Nkazy and Sente Yenzokuhle Makaziwe for their support, prayers, understanding and acceptance of the fact that I had to spend lots of time away from home. Not forgetting my ever supportive mother, sisters and brothers.

Abstract

The aim of the study was to establish the visually impaired students' information seeking behaviours, which comprises information needs, seeking and use. Identifying the students' information seeking behaviour helped to determine whether the services that are provided by the University of KwaZulu-Natal on the Pietermaritzburg (UKZN-PMB) campus met their information needs or not.

The population of the study comprised three units of analysis which were nine students with visual impairments, seven Subject Librarians of the UKZN-PMB Cecil Renaud main library and the Disability Unit Coordinator.

The students were surveyed by means of a semi-structured interview where they were asked what their information needs were, how they met those needs and whether the information they found from the institution's information system met their needs or not. The students' information seeking behaviour was plotted using Wilson's (1999) Information Behaviour model and the model was assessed for use with this group. The Subject Librarians and the DUC were surveyed by means of self-administered questionnaires where they were asked to specify their length of services, the frequency with which they assisted students with visual impairments and the students with visual impairments' preferences in information sources and formats, which the researcher consequently collected. The response rate was 100% from all the units of analysis.

The results of the study indicated that most of the students preferred electronic compared to print information formats, depending on their level of sightedness for those who were partially sighted. Results from the three units of analysis were integrated into an overall consideration of the dynamics of information seeking behaviour exhibited by the students and modifications were suggested on Wilson's (1999) Information Behaviour model which suited the group under study.

Barriers experienced by the students were the result of the lack of incorporating the needs of the visually impaired students into the design of the institution's information

systems, specifically the Cecil Renaud main library which has been given the primary responsibility by the institution through the UKZN Policy on Students and Staff with Disabilities (2004) to ensure efficient access to information for students and staff with disabilities. Recommendations are made in light of the results of the study in terms of conducting an access audit of library services and developing a strategy to implement the plan. The need for a budget for the purchase of assistive devices (or incorporating principles of universal design in the information system) and staff training is also discussed.

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In the course of my research work, there were individuals who provided direct or indirect assistance that I may not be able to enumerate them all. I am, however, particularly indebted to the following persons.

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My mother for her encouragement, prayers, love and care, not forgetting my ever supportive sisters and brothers for all they have done until this far and to my

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List of acronyms and abbreviations

AFB	American Foundation for the Blind
AIDS	Acquired Immune Deficiency Syndrome
ASK	Anomalous State of Knowledge
CNIB	Canadian National Institute for the Blind
DPSA	Disabled People South Africa
DU	Disability Unit
DUC	Disability Unit Coordinator
E-Sources	Electronic Sources
ICTs	Information and Communication Technologies
INDS	Integrated National Disability Strategy
ITNR	Information and Telecommunication Needs Research
JAWS	Job Access With Speech
LAN	Local Area Network
LISU	Library and Information Statistics Unit
OPAC	Online Public Access Catalogue
PEPUDA	The Promotion of Equality and Prevention of Unfair Discrimination Act
PMB	Pietermaritzburg
RMS	Risk Management Services
RNIB	Royal National Institute for the Blind
SA	South Africa
SAHRC	South African Human Rights Commission
UK	United Kingdom
UKZN	University of KwaZulu-Natal
UKZN-PMB	University of KwaZulu-Natal- Pietermaritzburg
UN	United Nations
W3C	World Wide Web Consortium
WWW	World Wide Web
WHO	World Health Organisation

Chapter 1: Introduction to the study

1.0 Introduction

Throughout the world until the latter part of the 1900s, people with disabilities, have for a long time been discriminated against in most areas of their lives. The Disabled People South Africa (2001: 3) lamented that physical and attitudinal barriers have sometimes led to the exclusion of people, including students with disabilities from accessing their fundamental rights.

For disabled students, inequalities in higher education can be linked to those that have shaped the schooling system in South Africa. Before the 19th century, as Howell and Lazarus (2003) observed, education provision was separated not only on the basis of race but also on the identification and categorisation of learners into those who were regarded as 'normal' and those who were seen to have 'special needs'. In reality, this tended to encompass a wide range of learners including those with different disabilities and those who were perceived to have learning difficulties or behavioural problems. The data collected in the Census of 2001 indicates that there were 2 255 982 people with various forms of disability. This number constituted five percent (5%) of the total population enumerated in this census. Sight disability was the most prevalent (27%) followed by physical disability (26%), hearing (17%), emotional disability (14%), intellectual disability (10%) and communication disability (6%) (Statistics South Africa, 2001). Figure 1 below depicts the prevalence of disability in South Africa.

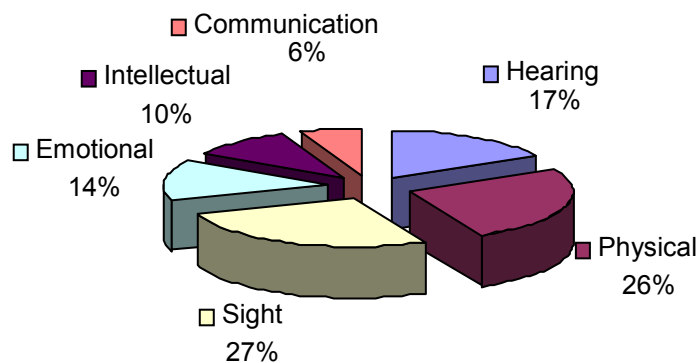


Figure 1. Prevalence of Disability in South Africa

Source: Statistics South Africa, 2001

Since 1994, with the advent of the new democracy in South Africa, attention has been focused on transforming the inequalities of the past and creating conditions for sustainable economic development (Bleakney, 2002). Both these imperatives have focused attention on the higher education system in South Africa and its potential to either reinforce existing inequalities or to substantially alter the political and economic landscape by contributing to a new skills and knowledge base in the country.

The lack of appropriate and adequate provision for learners with disabilities at the schooling level has had a profound effect on the number of disabled people who have been able to access post-secondary educational opportunities. The Integrated National Disability Strategy (INDS) argued that although no reliable statistics existed, higher education largely remained out of reach for the majority of people with disabilities (Office of the Deputy President, 1997). There is some sketchy evidence to suggest that more students with disabilities are now finding their way into the higher education system, partly as a result of increased access and better provision at the schooling level. It is also difficult to confirm or to obtain an accurate picture of the present profile of students with disabilities in South African higher education institutions (Department of Education, 2001).

There are different formats and categories of people with disabilities as Figure 1 shows, however, the focus of this study is on students with visual impairments specifically at the University of KwaZulu-Natal, Pietermaritzburg campus, hereafter referred to as UKZN-PMB.

Blindness and visual impairments are common in all countries of the world and South Africa is no exception. Considerable changes in the education of people with impairments have led to an increase in their educational aspirations and thus an increasing number of visually impaired persons who wish to enter higher education (Department of Education 2001).

Etheridge and Mason (1994: 2) rightly pointed out that all people have the right to further education and training and that these must be available in ways that meet people's needs, regardless of gender, race, age and ability. This statement is also true of students with visual impairments and an impairment of sight does not remove that right. Lynch (1994: 42) concurs with this argument; a student with visual impairment is entitled to access to higher education not because of that physical impairment but because he or she is a person in his or her own right.

The University of KwaZulu-Natal's (UKZN) (2004) mission statement indicates that it is committed to increasing access to learning of students with special needs and redressing the disadvantages, iniquities and imbalances of the past. This was evident with the formation of the Disability Unit (DU) in 1995. The DU's mission is to assist students with disabilities in realising their greatest academic potential and to maximise opportunities for their personal growth and development. Services provided by the DU include, among others:

- Academic support for students with disabilities;
 - liaising with faculties
 - brailing of material
 - audio recording
 - applications for extra time for tests and exams
- Assistance with financial aid;
- Increasing awareness around disability issues;

- Providing information and training for students with visual and/or mobility impairment;
- Orientation and mobility training for students with visual and/or mobility impairments;
- Counselling and individual support (University of Kwa-Zulu Natal, 2007).

The above-mentioned services provided by UKZN-PMB through the DU are evidence of the willingness of the institution to provide support facilities for students with impairments¹. The question that arises is to what extent these services meet the students' general and specific needs. Provision of services for students with visual impairments in further education, in Cory's (2003) words, 'should not be seen as a separate development which is exclusive to a small client group'. Rather, institutions of higher learning should overtly recognise and facilitate access for all members of the community, thus enabling them to fulfil their potential through provision of a fully available range of broad, relevant and balanced educational opportunities that will take into account the level of needs the students have.

1.1 Problem statement

The information patterns and broader information behaviour of students in general are varied (Budricks 2007; Shunmugan 2002; Davis 2000; Brockmeier 1992). New students must adapt to a new environment and must select courses, prepare academic assignments and sit for examinations. Often, such information seeking can be done on their own or with minimal help. Brockmeier (1992: 5) suggests that students will need to know about the university or college and the new environment in which they operate.

Academic information needs form an integral part of every student's life. However, those needs cannot be seen in isolation from other needs such as the economic, physical, and financial ones, to mention but a few. Along the same line of thinking, Davies (2007: 788) pointed out that students may draw from the institution's

¹ The terms students with visual impairments and visually impaired students are used interchangeably in this study.

resources for a variety of purposes in their daily routines including academic, leisure, living and so on. The author further highlighted the fact that most universities claim to be equally hospitable to their whole community and should know no artificial boundaries in terms of meeting everybody's needs.

The reality, as Davies (2007: 790) observed, is that resource constraints may impinge greatly on what service a university can provide, and there is constant assessment of priorities based on affordability and perceptions of the institution's needs. However, members of the student community are by no means uniform in their needs or in the way that they can or do access the different services offered by the university. Etheridge and Mason (1994) argued that one test of an institution's commitment to fulfilling its aims is the way it deals with people who have special needs (such as the visually impaired) including discovering who they are, what they need and how they can best be assisted.

It is difficult to assign a value to information; however, the question is not whether everybody needs information, (for they do) rather, the issue is whether the information available to them is at the right level and in the quantity required, of acceptable accuracy, and of appropriate timeliness. For students with visual impairment, the mere fact that information exists is not enough. The students must be able to access that information through whatever valid information seeking behaviour they choose to employ, and the information they discover must satisfy their general or specific needs.

In recognition of the fact that students with visual impairments are enrolling in institutions of higher learning, such institutions are compelled to provide services, or as is the case with UKZN, evaluate and improve on such services so that they meet the student's general and specific information needs.

1.2. Research aim

The study's aim was to establish the visually impaired students' information seeking behaviours which comprise information needs, seeking and use. Such a study would

help determine whether the services that are provided by the University of KwaZulu-Natal meet the information needs of this particular group or not.

1.3 Research questions

In light of the above stated aim, the study seeks to answer the following questions:

- What is the demographic profile and academic level of study of visually impaired students at UKZN-PMB?
(This question includes specifying their gender and age, with a distinction being made between undergraduate and postgraduate students. More often than not, undergraduate students use prescribed sources while postgraduate study is largely based on research)
- What are their information needs?
(This question is a follow up to their level of study showing the format of information they seek and the various factors that influence their information behaviour)
- How do they meet those needs?
(This question elicits information about preferred format of information sources and which services provide or do not provide the required information)
- Where do they find the information they are seeking?
(This question reveals their behaviour in information seeking, which is equally important. That is, how do they go about seeking information?)
- How do they use the information they have obtained?
(This explains how the information acquired was used and if it was found to be useful or not)
- What are the barriers that they come across while seeking information?

(Students were able to point out the hindrances or barriers in their information seeking process).

- Is the UKZN-PMB doing anything with regard to improving services for the visually impaired students?

(This question enables the researcher to know if there are any current initiatives that are planned by the UKZN regarding information services for the visually impaired students)

- How can services that are tailored to the visually impaired students be improved?

(This question provides an opportunity to recommend for practice)

1.4 Definition of terms

This section briefly defines key terms and concepts which will provide the context in which they are used in this study (further discussed in 2.2.1).

1.4.1 Disability: The definition and classification of disability has gone through a lot of changes over the centuries and many scholars have defined it differently. However, as Philpott (1994: 15) observed, the definition of disability is particularly significant as it is an expression of not only how society perceives people with disabilities but also how it responds to them. Some disabled people's organisations have attempted to develop an acceptable definition of disability, for example:

“Disability is the disadvantage or restriction of activity which takes little or no account of people who have impairments and thus excludes them from mainstream activity” (British Council of Disabled People 2003).

The Disabled People South Africa (2001: 6) advised that disability needs to be defined in context rather than focusing on the inabilities of people, which inadvertently leads to stigmatisation and categorisation. The United Nations Hand Book (2000: 77) defines disability as any restriction or lack (resulting from an inability) to perform an activity in the manner or within the range considered normal for a human being.

In this study the terms ‘people with disabilities/impairment’ and ‘disabled people’ are used interchangeably. Both these terms are regarded as appropriate and used interchangeably by the organised disability movement in South Africa (DPSA). In particular people should move away from attempting to define who is or who is not a disabled student (Office of the Deputy President, 1997) but the emphasis should be on responding to the diverse learning needs of students rather than the category of disability into which they fit.

1.4.2 Visual impairment: Visual impairment is the term used for people who have some degree of sight, but who have, for example, a limited range of sight and focus that cannot be easily corrected with spectacles, who are squint, who need special lighting to be able to see, who have blurred vision sometimes as a result of cataracts, or who have tunnel vision (Howell and Lazarus 2003).

People with a visual impairment normally need some assistive devices and services which take into account the level of needs. Some people require very specialised spectacles, Braille or large print and other equipment to assist them to compensate for their low vision. The low vision constitutes a significant limitation of visual capability resulting from disease, trauma, or a congenital or degenerative condition that cannot be corrected by conventional means, including refractive correction, medication, or surgery (Etheridge and Mason 1994: 10).

1.4.3 Blind: refers to the total loss of eyesight (Brockmeier 1992: 10) as opposed to degree of visual impairment. Blind persons might experience difficulty in moving around and knowing where things are, doing some activities of daily living, writing, reading and following visual signs or commands. However, as Cory (2003) observed, ‘some of those who are blind may have some perception of light’.

1.4.4 Information: Information has been defined by many people differently, and most of the time the definitions are influenced by the discipline in context. The concepts ‘data’, ‘information’ and ‘knowledge’ have been used interchangeably by different scholars, which unfortunately adds to the confusion surrounding the meaning of such terms.

Data, according to Ikoja-Odongo and Mostert (2006), has no inherent meaning and thus needs to be analysed to give meaning. Bleakney (2002) supports the notion that data, through a process of change, becomes organised, thus becoming information, while Craven (2003) argues that information as such is also static and lifeless, existing in forms such as text, electronic and audio. Many assert that only when human beings assign personal meaning and interpretation to information does it become knowledge, which Case (2002) describes as 'what we know'. For the sake of this study Kaniki's (2001: 191) definition will be used, that of 'information being ideas, facts, imaginative works of the mind and data of value, potentially useful for decision making, question answering, and so on'.

1.4.5 Information need: a state that arises whenever individuals find themselves in a situation requiring knowledge to deal with the situation as they deem fit, (Irvall and Nielsen 2005) or whenever the person has a knowledge gap that needs to be filled. It evolves from an awareness of something missing, which necessitates the seeking of information that might contribute to understanding and meaning (Kuhlthau, 1993). Belkin, Oddy and Brooks (1982) saw information as a method used to solve a problem, which is regarded as an inadequate state of knowledge, better known as an Anomalous State of Knowledge (ASK). The information need is a requirement that drives people into information seeking.

1.4.6 Information seeking: Wilson, in Case (2002) regarded information seeking as the purposive search for information in order to satisfy certain goals. Case (2002: 5) described the concept as a conscious effort to acquire information in response to a need or gap in one's knowledge. Kuhlthau (1991) regarded information seeking as users' constructive efforts to derive meaning from information in order to extend their state of knowledge on a particular issue or topic, thus incorporating a series of encounters with information within a space of time rather than a single reference incident.

Fourie, (2004) cited in Ikoja-Odongo and Mostert (2006: 148), observes that information seekers can either take responsibility for their own processes or work through with an intermediary. Once relevant information is located, the information

seeker studies, copies and integrates it with what is already known, thus enabling problem solving.

1.4.7 Information seeking behaviour: is defined by Krikelas (1993) in Davis (2000) as an activity of an individual that is undertaken to identify a message that satisfies a perceived need. In this context, information is viewed as any stimulus that reduces uncertainty. Information seeking behaviour arises as a consequence of a need perceived by the information user, who in order to satisfy it, makes demands upon formal or informal information sources or services, resulting in either success or failure to satisfy that need (Wilson 1999: 251).

The effort to satisfy the perceived need results in information seeking behaviour. Wilson (2000) adds that in the process of seeking, a variety of information systems, be they manual or computer-based, may be interrogated. In a nutshell, there are steps involved in information seeking behaviour.

1.5 Justification of the study

Many studies, locally and internationally, have been conducted to determine the information needs and information seeking behaviour of particular categories of people including engineers in Ghana (Tackie and Adams 2007), parliamentarians in South Africa (Mostert and Ocholla 2005), high school students (Chung and Neuman (2007) and undergraduate students in South Africa (Davis 2000).

Shunmugam (2002) explored barriers faced by visually impaired students at the then University of Natal and Budricks (2007) did a needs assessment on visually impaired students at UKZN-PMB. The focus of their studies was largely on the barriers on information services this segment of students face. The current study is different from theirs in that it endeavours to find out whether the information services that are provided by UKZN meet the students with visual impairments needs and to investigate the visually impaired students' information seeking behaviour. Previous studies that were designed to determine the information needs and seeking behaviour

employed interviews and self-administered questionnaires to collect data. This study will use the same methodology because it proved to be appropriate.

In South Africa, the National Board of Employment, Education and Training Equity Working Party drew up Guidelines for Disability Services in Higher Education (1994) and the UKZN has a Policy on Students and Staff with Disabilities (2004). In light of these and other relevant legislation and documents (discussed later), this study's rationale lies in determining whether the information services that are provided by UKZN-PMB meet the required standards and appropriately serve the needs of the students with visual impairments. The other four UKZN campuses as Shunmugam (2002) highlights are facing the same problem but this study will focus only on UKZN-PMB.

Due to the increasing awareness of, and the South African Constitutional 1996 provision for, the education of people with disabilities, many more visually impaired students are enrolling for higher education (Department of Justice and Constitutional Development 1996). Consequently, the demand for services that are tailored to meet their needs is increasing as well. At tertiary level in particular, as Atinmo (2007) observes in Nigeria, the visually impaired students often fend for themselves by providing their own reading and relevant academic material. The significant number of people in the community that have visual impairment of one kind or another, and indeed, the varying degrees of impairment within that group, emphasises the fact that, as Davis (2007) warns, "a one size fits all" approach is of little value in meeting needs and could result in provision of inappropriate services.

The study identified, among other things, what the visually impaired students' information needs were, how the students in their level of study (undergraduates and post-graduates) went about seeking information, where they found information, which formats (print, electronic or face-to-face) were preferred and used and how they used the acquired information. It further identified barriers in obtaining academic information the students with visual impairments faced and then recommendations were made.

1.6 Scope and limitations of the study

The study was confined to UKZN-PMB because of the time constraints of a course work masters. Certain criteria were employed to determine the selection of the study population. Students who fitted the following criteria were interviewed:

- They were either totally blind or visually impaired;
- They were currently registered students at UKZN-PMB;
- They were known by the DU of UKZN-PMB and registered as blind or visually impaired; and
- They utilised or required one or more of the specialised support services made available through the DU to facilitate their learning and integration on campus.

The reason for using the final criterion above was because members of the study population would know for certain the services that were being provided by the Disability Unit and would be better positioned to say whether they were useful or not. Again it would not be possible to identify students with visual impairments without going through the Disability Unit.

1.7 Methodology

The study combined the two major research approaches (qualitative and quantitative) which is called methodological triangulation. This approach has been described by Denzin in Babbie and Mouton (2001: 257) as the use of two or more methodologies of data collection procedures within a single study. Questionnaires and interviews were employed as data collection instruments. The elements of analysis were the (i) students with visual impairments who fitted the selection criteria (above) (ii) the Disability Unit Coordinator (DUC) and (iii) the seven Subject Librarians on the main library (Cecil Renaud) at UKZN-PMB main campus.

1.8 Research outline

The study has six chapters. **Chapter One** comprises the introduction which sets the scene for the whole research study. It provides brief background information on

disability issues in South Africa, the research problem, objectives, research questions and definitions of key terms used in the study.

Chapter Two consists of the conceptual framework used for the study and also briefly discusses models that have been used by other studies relating to disability issues. A literature review, of literature related to the study is provided in this chapter. The chapter also provides an overview of the UKZN Policy on students and staff with disabilities.

Chapter Three describes the research design and methodology which discusses the design, criterion used to determine the population and the instruments used in the study. The validity and reliability of instruments and data collection procedures are described, and an evaluation of research methodology is provided.

Chapter Four presents the research results from the students' interview, Disability Unit coordinator and Subject Librarians' questionnaire in relation to the literature review.

Chapter Five discusses the results as presented in Chapter 4 in light of the literature review and study's aim and objectives.

Chapter Six provides conclusions and provides recommendations for improvements of information service.

1.9 Summary

This introductory chapter provided the problem with which the study was concerned including its aim. The questions that the study sought to answer were outlined together with a brief definition of key concepts used in the study. Justification of the research, scope and limitations were described. The structure of the study has been briefly outlined.

Chapter 2: Conceptual framework and literature review

2.0 Introduction

This chapter provides the conceptual foundation of the study and a review of literature. It also includes other empirical studies related to information seeking behaviour or needs of specific groups such as college students and then specifically, students with visual impairments. Highlights on concepts of disability and differing definitions of the same are provided. The review of literature is structured around disability, legislation underpinning services for people with disabilities, of which students with visual impairments are a part, followed by a brief highlight of the UKZN Policy on Students and Staff with Disability. An overview of information seeking behaviour is presented in the light of the population under study. This is followed by a discussion of studies on information needs and information seeking behaviour of the visually impaired. A summary is provided at the end.

2.1. Conceptual framework for this study

Information seeking is an important part of learners' lives, and in order to improve the services rendered to learners, a better understanding of students' information seeking behaviour in relation to existing information systems is necessary. One way of achieving this understanding is by using theoretical information seeking concepts as lenses for the identification, analysis and description of their behaviour.

According to Ikoja-Odongo (2002: 86) 'concepts' refer to 'major phenomena studied, eventually forming the foundation of the conceptual framework of the subject under investigation'. The author further states that concepts may also be viewed as mental images expressed as subjective thoughts around things encountered in daily life. Researchers also use theory as a way of framing their study, for instance, Belkin's Anomalous State of Knowledge (ASK) as a theoretical approach, and their theoretical framework influenced how they designed the study and how they collected and analysed the data (*Understanding Research...*2004: 143).

The emphasis in information seeking behaviour in Information Science as observed by Julien in Ikoja-Odongo and Mostert (2006: 145) can broadly be defined as that which is concerned with determining user's information needs, searching behaviour and subsequent use of information. Information seeking behaviour is, among others aspects, concerned with understanding how people seek and make use of information and the channels they use to get information (which will be discussed later). In a nutshell, information seeking behaviour can be viewed as activities directed towards obtaining information in response to an information need.

2.1.1 Conceptual basis

The conceptual basis of the study lies in The Promotion of Equality and Prevention of Unfair Discrimination Act No.4 of 2000 (Office of the President 2000), which is in turn grounded in the Bill of Rights of the South African Constitution (Department of Justice and Constitutional Development 1996). It expands on the provisions of the South African Constitution 1996 prohibiting unfair discrimination and guaranteeing equality before the law. Discrimination, according to section 1 (viii) of the Act, means any act or omission, including a policy, law, rule, practice, condition or situation which:

- (a) imposes burdens, obligations or disadvantages on; or
- (b) withholds benefits, opportunities or advantages from, any person on one or more of the prohibited grounds, which include disability and any other ground that might disadvantage a person, undermines human dignity or adversely affects an individual's rights and freedoms.

The Act gives effect to the principles of equality, fairness, social progress, justice, human dignity and freedom. Significantly, the Act rules that the promotion of equality is the general duty and responsibility of persons operating in public and private domains including institutions of higher education.

Underlying the concept of 'information seeking behaviour' is the notion of information need. This, according to Kuhlthau (1993: 341), necessitates the seeking of

information that might contribute to understanding and meaning required in order to meet that need. That particular need has to be satisfied by consulting formal and/or informal information sources or services, hence the need to provide information equitably.

The Promotion of Equality and Prevention of Unfair Discrimination Act (PEPUDA) No.4 of 2000 according to The Office of the President (2000) compels institutions of higher learning to make sure that visually impaired students are able to consult whatever information source or services they require without barriers or discrimination, and that such services should be provided equitably. It holds that educational institutions such as UKZN should strive to accommodate all learners regardless of their physical, intellectual, social and emotional status.

2.1.2 Conceptual model

The conceptual model for this study was adapted from Wilson's Model of Information Behaviour (1999). Other information behaviour models such as Ellis (1989) and Ellis, Cox and Hall (1993) are found in the literature. Ingwersen's (2004) model has been criticised by Dick (2005) for marginalising the core concerns of our society in South Africa in this regard, for example, how ordinary people on the ground seek the information they need. Dick therefore, suggested that Ingwersen's model should take a wider view of the social contexts in which information seeking and retrieval take place, and hence enlarge its scope of application, given the historical, economic and societal contexts of people in South Africa.

Wilson's model emphasises the need to explore information seeking in context. The model allows people to be conceptualised as both individual entities and socially constructed entities, which is appropriate in the context of the theory in the disability field. Wilson has developed various models of information behaviour over a period of time, for example from 1981 to 1999. His information behaviour models for example, indicate that various factors influence specific information needs. Specifically, Wilson's (1999) information behaviour model comprehensively studies users from the perspective of their information needs, information seeking and information

behaviour. Wilson's (1999) model was used as a framework for the study as it further allows for a description and explanation of user information behaviour. The model was found by the researcher to be more applicable to the population under study than other models and it also was applicable within the South African context. Further adaptation of the model has been considered by the researcher. This study should establish the validity of the adaptation.

The model (see Figure 2) portrays information seeking behaviour arising as a consequence of a need, which dated back to Belkin's (1982) Anomalous State of Knowledge (ASK) approach and presupposed the existence of a 'gap' in the knowledge base of the user which needs to be filled by information. An information need as Brockmeier (1992: 10) observed is a problem or question recognised by an individual for which either information or services are needed. It evolves from an awareness of something missing, which necessitates the seeking of information that might contribute to understanding and meaning and fulfilling the user's needs (Kuhlthau 1993). In order to satisfy that need, in Wilson's (1999) words, the user makes demands upon formal or informal information sources or services, resulting in success or failure to find relevant information. If successful, the user can make use of the information found. The modification which is shown in a broken line in Figure 2, illustrates that if the information found failed to satisfy the need, the user has to reiterate the search process.

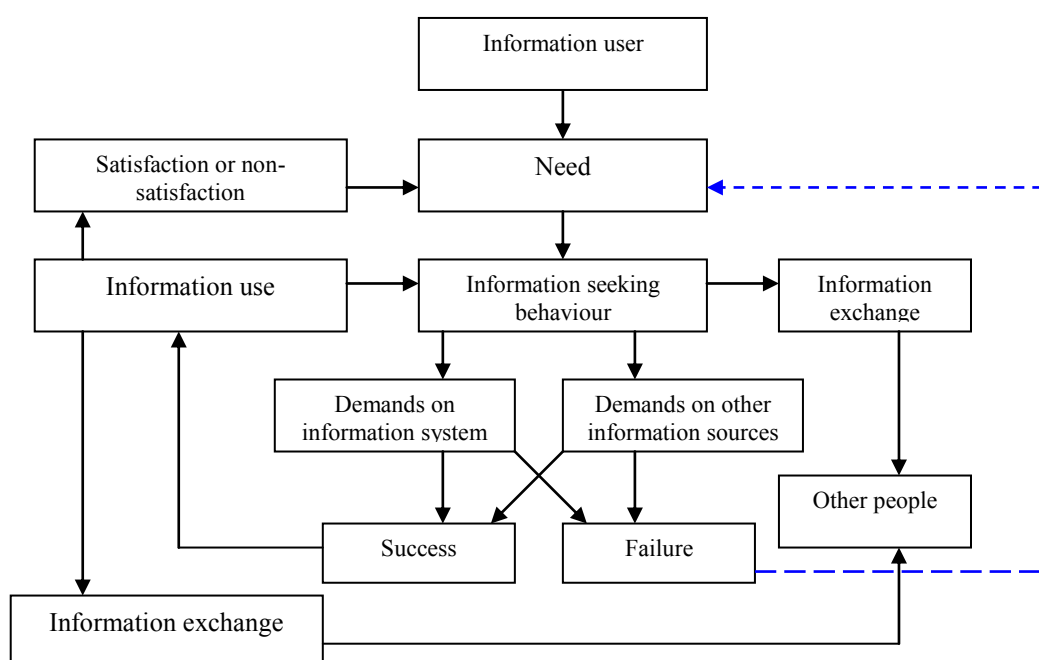


Figure 2. A schematic diagram of the process of information seeking according to Wilson's (1999) Model of Information Behaviour, with additional pathway (broken line) indicating that if the information found does not meet the user's needs, the search process has to be repeated.

The model demonstrates that part of the information seeking behaviour may involve other people through information exchange and that information perceived as useful may be passed to other people, as well as being used (or instead of being used) by the person himself or herself. Wilson's (1999) model identifies a cognitive gap which emanates from the anomaly alluded to by Belkin (1982) which is the approach this study has used. The conceptual framework for this study had its origin in literature which has emphasised the need to explore information seeking behaviour in the context of the particular sector of information seekers being considered.

2.2 Review of related literature

Literature searching is defined by Gash (2000) and Cone (1998) as a systematic and thorough search of all formats of published literature, for example, books, book chapters, published journals as well as unpublished theses and doctoral dissertations. At this time and age, the use of accredited electronic sources (e-sources) is common, enabling the identification of as many items as possible that are relevant for everyone.

Benefits of conducting a literature review in a study have been highlighted by many scholars including Kothari (2004); Stilwell (2004) and Kaniki (2001). In Stilwell's (2000: 173) words "a good literature review needs to indicate the different views, agreements, disagreements and trends of thought on the topic of research and be accurately portrayed and acknowledged in the text".

2.2.1 Concepts of disability and definition

The vast majority of people with disabilities in South Africa have historically been excluded from access to education, housing, transport, employment, information and community life (Wolpe, Quinlan & Martinez 1997: 95). They have been prevented from exercising fundamental political, economic, social, cultural and developmental

rights. In Howell's and Lazarus' (2003) view, these injustices were reinforced by the inequalities of the apartheid system which enacted laws that added to the cumulative disadvantages and further perpetuated the social isolation of people with disabilities. The injustices had been perpetuated by attitudes, prejudices and stereotypical views that saw people with disabilities as dependent and in need of care (Philpott 1994: 21).

2.2.1.1 Definitions of disability

A closer look at the relevant literature within disability research shows that there is no agreement on how the concept of disability should be defined. On the contrary, there are several competing definitions within at least two different models (Philpott 1994: 11). Such ambiguities led Koppers (2004: 13) to think that disability should be defined based on the 'model' that is used as a basis. It is however, now generally accepted, in Ingstad and Whyte's (2007: 79) words, that disability is a social construct and most of its effects are inflicted on people by the social environment. In this view, a person is disabled if the world at large will not take into account their physical, sensory or mental differences.

The World Health Organisation (WHO) (1999) has now revised its definitions in major ways. The term 'activity' replaces 'disability' and 'participation' is used instead of 'handicap'. The alterations made by the WHO on the definition of disability, reflects a shift in orientation away from the major medical model to the social model of disability both of which will be discussed in 2.2.1.2.

The WHO (1999) tried to make a distinction between the following terms:

- handicap as a disadvantage for an individual, resulting from an impairment or disability that limits or prevents the fulfillment of a role that is normal (depending on age, gender, social and cultural factors) for that individual. It refers to the interaction of persons and society.
- disability as any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being, this resulting from impairment. It refers to the person.

- impairment as any loss or abnormality of physiological or anatomic structure or function. It refers to organs of the body.

The WHO classification of disability, based on the theory of personal tragedy, has been widely adopted. However, criticisms of this definition of disability have been raised by the disability rights movement (Philpott 1994: 18). One of the criticisms, according to Cheverst et al. (2003: 174), was that the WHO classification is based on the theory of personal tragedy which individualises the problem of disability. This, as Koppers (2004: 124) highlighted, poses problems for individual and group identity in that people are categorised according to disease or impairment, not according to social disadvantage. In the same vein, disability as Urquhart (2001) observed, is actually a fluid and continuous condition which has no boundaries but which is, in fact, the essence of the human condition. And, as a condition which could be experienced by us all at some stage in our lives, disability is actually normal. This view is also supported by Rowland (2007) and Barnes and Mercer (1996) who warned that bodily differences should not be allowed to mask our essential humanity.

Most of the day-to-day problems that people with disabilities face are caused by the fact that they live in a hostile, ‘disabling’ world largely designed to suit able-bodied people. Philpott (1994: 15) warned that disability should not be defined in terms of individual tragedy because the disabled people will consequently be treated as victims of circumstances. Philpott feared that this kind of treatment will not only be evident in day-to-day interactions within society but will be reflected in service provision and policies relating to disability.

The extent and experience of disability is largely determined by how much the person’s environment prevents her or him from taking part in community life on an equal level with others. That is the reason why Disabled People South Africa (DPSA) (2001) argued that disability is imposed by society when a person with impairment is denied access to full economic and social participation. Sometimes society fails in many ways to accommodate the rights and needs of individuals with impairments.

An alternative definition provided is that ‘Disability is the disadvantage or restriction of activity which takes little or no account of people who have impairments and thus

excludes them from mainstream activity' (British Council of Organisations of Disabled People 2001). This definition will be used as it reflects principles enshrined in the Constitution and enacted in PEPUDA (Office of the President 2000) regarding the rights of all citizens of the country including those with disabilities.

2.2.1.2 Brief overview of the medical and social model

Researchers have used a number of models in disability studies among which are the two central models of disability namely the social model and the medical model. These models are briefly highlighted. Oliver (2004) as a researcher, writer and campaigner, provides the following definitions. Firstly, the medical (or individual) model:

... locates the 'problem' of disability within the individual and ... sees the causes of this problem as stemming from the functional limitations or psychological losses which are assumed to arise from disability.

The solution(s) relate to how the 'problem' [of disability] is defined. The medical model posits a medical solution to rehabilitate people so they can be once again seen as part of and can contribute positively to society. Consequently, services rendered are to ensure that people with disabilities can operate, at least to some degree, in society, showing close links to welfare and charity approaches.

In view of this definition, the dominant medical discourse of disability and attention to individual deficit has also influenced the nature and provision of learning support systems for students with disabilities where they exist, in South African higher education institutions. The DU at UKZN is a manifestation of such an approach.

In contrast, is the social model, whereby disability is described by Oliver (2004) as:

... all the things that impose restrictions on disabled people; ranging from individual prejudice to institutional discrimination, from inaccessible public buildings to unusable transport systems, from segregated education to excluding work arrangements.

The social model recognises that disability is not absolutely located with the [medical] condition of the individual but can arise when people with various impairments try to live, work and interact normally in society – the focus is shifted onto solutions that change society so none is excluded (say, from full participation in the educational and social life of UKZN).

According to Mann (2006) it is society that disables people with impairments. The social model was developed in the context of disabled people campaigning for change in societal attitudes. The model focuses on the need for society to change policy and attitudes, and to eliminate economic discrimination against disabled people. The social model has undoubtedly been the dominant paradigm in researching and understanding disability in recent years – ‘redefining disability in terms of a disabling environment, repositioning disabled people as citizens with rights, and reconfiguring the responsibilities for creating, sustaining and overcoming disablism’ (The Open University 2008)

Impairment becomes a disability when society that does not take the impairment into account. An example is the architectural hindrances as well as laws and attitudes prevailing in social groups. Rowland (2007: 87) emphasised that the focus of the social rights model shifts from individual responsibility where the onus is on the individual to ‘fit’ into society as best as possible where all are accommodated irrespective of the nature of the disability. It is society that must be adapted in order to avoid or at least reduce the disabling effects of barriers. Barnes and Mercer (2004: 15) argued that the solution, or the remedy, could be given not by medicine, but by implementation of appropriate legislation on special education, and architectural considerations for persons outside the norm of the adult, able-bodied people. Such endeavours should focus, among other things, on the provision of services based on universal design principles.

Universal access, according to the South African Human Rights Commission (SAHRC) (2002) means the removal of cultural, physical, social and other barriers that prevent people with disabilities from entering, using or benefiting from the various systems of society that are available to other citizens. A strong move has been made by South Africa and other countries aiming at an inclusive education rather than

providing special schools for disabled scholars which further segregates people with disabilities. All efforts were aimed at having universal access [accessible to all] for people with disabilities.

2.2.1.3 Preferred terminology

Another equally important aspect in disability studies is the use of language. According to Philpott (1994: 35) words reflect the values and attitudes of the social context in which they are used. It is important to understand the effect of words we use and choose if we are to break down barriers and participate in building a better society for all. Koppers (2004: 79) stated that people with disabilities are particularly vulnerable to the misuse of language and terminology that labels and stereofomats them. Negative terminology ultimately creates a culture of non-acceptance of diversity. Words that emphasise the inabilities of people inadvertently lead to categorisation, stigmatisation and discrimination. These result in people with disabilities being seen as different, abnormal or inadequate members of a separate group. Disabled People South Africa (DPSA) (2002) warned that terminology can reinforce discrimination against particular groups in society, but language can also be used as a powerful tool to facilitate change and bring about social integration.

The following are a few examples of preferred terminology as provided by DPSA (2000).

- Avoid 'suffers from', 'afflicted with' or 'victim of', all of which cast disabilities as a negative. 'Suffers from' indicates ongoing pain and torment, which is no more the case for most people with disabilities as it is for most people without disabilities. 'Afflicted with', denotes a disease, which most disabilities are not. 'Victim of' implies that a crime has been committed on the person who has a disability.
- Use 'disability' not 'handicap.' The word 'handicap' derives from the phrase 'cap in hand', referring to a beggar, and is despised by most people with disabilities. Other terms to avoid are 'physically/mentally challenged' (who isn't?) 'cripple' or 'crippled.'

- Use ‘able-bodied’ or ‘people without disabilities.’ The terms ‘normal’ and ‘whole’ are inappropriate and inaccurate.
- Most disabilities are not a disease. Do not call a person with a disability a ‘patient’ unless referring to a hospital setting. In an occupational and physical therapy context, ‘client’ or ‘customer’ is preferred.
- Some diseases by legal definition are considered disabilities. Victimization imagery (‘AIDS victims’) or defining the person by the disease (‘she or he is a diabetic’) is inappropriate. Use ‘person with diabetes’ or ‘people living with AIDS’.

It cannot be over emphasised that language reflects the social context in which it is developed and used. It therefore reflects the values and attitudes of that context, and plays an important role in reinforcing values and attitudes that lead to discrimination and segregation of particular groups in society (DPSA 2000).

2.2.2 Blindness and visual impairment

Blindness or visual impairment means that the person's sight or vision is seriously reduced or completely lacking. The lack of sight hinders the normal performance of daily tasks. Statistics South Africa (SSA) reports that people with sight disabilities are by far the largest disability group in the country (32% of all disabled South Africans) based on the 2001 census.

The goal of education is to prepare students to participate in society and for most people, vision is fundamental to learning. Limitations on the ability to receive information from the world around us in Davies’ (2007) words can have far reaching effects including an impact on students’ ability to understand concepts or learn a language that is not in a usable format for them. Students with visual impairments have unique educational needs which are most effectively met using a team approach of professionals and students. In order to meet their unique needs, Cheverst *et al.* (2003: 297) suggested that students with visual impairments must have specialised services, books and instructional materials in appropriate media (including Braille), as well as access to specialised equipment and technology so they can have equal access

to the core and specialised curricula, and to enable them to most effectively compete with their peers in school, university and ultimately in society.

There are basically three concepts of visual impairment, which according to the American Foundation for the Blind (AFB) (2008) are:

Low vision whereby a person may have difficulty accomplishing visual tasks, even with prescribed corrective lenses. However, a person can enhance his or her ability to accomplish these tasks by using compensatory visual strategies, low vision devices, and environmental modifications.

Functional vision is vision that can be used to perform a task. In this particular case it is the responsibility of the institution and rehabilitation professionals to provide opportunities for students who are visually impaired to maximise their functional vision, thereby improving their ability to function in a higher learning basic education setting.

Visual efficiency: is the extent to which a person uses available vision. It is important to note that both functional vision and visual efficiency are characteristics of the individual, and are not necessarily predicted by clinical measures. For example, a person who is considered 'legally blind' may have considerable residual vision.

The UKZN, as mentioned previously, has some assistive devices for students with visual impairments, among which is computer software known as Job Access with Speech (JAWS). According to AFB (2008) this product converts text and components of the Windows operating system into synthesised speech, allowing for access to Windows-based computer systems. Other tasks that JAWS performs include, but are not limited to, browsing the Internet, reading electronic books and other material, reading text out-loud from a computer screen and word processing (Rowland 2007).

According to Arter *et al* (1999: 76) Braille is another assistive device. It is a tactile symbol system based on representation of letters and numbers by varying arrangements of a six dot cell. Braille can be used for labelling cans, packages, clothing, and other items, as well as for reading materials including books, magazines,

and computer output. A Braille transcriber determines how to most accurately present information from a print textbook into a Braille version and then transcribes it into Braille so that a student who is blind or has a low vision can access the content and thus get the same benefits from the information as his/her sighted peers. AFB (2008) added that there are other low vision devices which are tools used by persons with residual vision to read text, including both optical devices (such as magnifying glasses) and non-optical devices (such as screen enlargement programs).

Howell and Lazarus (2003) noted that barriers for disabled students are further exacerbated by the physical environment of higher education institutions. In South Africa some of these remain largely physically inaccessible to many disabled students, especially physically disabled and blind students. For blind and deaf students in particular, access to information has been extremely limited. Barriers arising from the curriculum have been evident in the provision methods and materials of teaching and learning used, the manner in which classes and learning have been managed as well as the nature of the assessment practices (such as written examinations) used within the institutions (Department of Education, 1997).

It is important to remember that educational goals for students with visual impairments are essentially the same as those for all students. The goals, as enumerated by Huang (2004), are effective communication, social competence, employability, and personal independence. In order to accomplish these goals, however, students with visual impairments require specific interventions and modifications of their educational programs. Shakespeare (2006: 173) emphasised that an appropriate assessment of these unique educational needs in all areas, related to the disability and how the instructional methods are adapted to meet these needs, is essential to ensure appropriate educational programming.

All students, including those with visual impairments need an educational system that meets their individual needs, fosters independence, and is measured by the success of each individual in the school and community. Vision is fundamental to the learning process and is the primary basis upon which most traditional education strategies are based. To echo the words of Etheridge and Mason (1994: 15), students who are visually impaired are most likely to succeed in educational systems where appropriate

instruction and services are provided, in a full array of program options by qualified staff, to address each student's unique educational needs, as required by law.

2.2.3 Legislation underpinning service provision for people with disabilities

The provision of appropriate and adequate services to visually impaired people is underpinned by several aspects all of which are to some extent based on a philosophy of inclusion and adherence to best practice. Venter and Lotriet (2005) point out that:

Legislation in many countries creates a mandatory framework in which people with disabilities or special needs have to be accommodated, such as the United Nations Standard Rules on the Equalisation of Opportunities for People with Disabilities, 1993.

These international rules compel South Africa (SA), as a member of the United Nations (UN), to maintain the minimum requirements in meeting responsibilities towards disabled persons. The principle of equal rights implies that the needs of each and every individual are of equal importance; that those needs must be considered in the planning for societies and that all resources must be employed to ensure that every individual has equal opportunity for participation.

In August 2002, according to the SAHRC (2000) a United Nations ad hoc committee met for the first time to discuss the Comprehensive and Integral International Convention on Protection and Promotion of the Rights and Dignity of Persons with Disabilities. This was an initiative to develop a new and specific disability rights instrument and was supported by most countries including South Africa. South Africa is a signatory to a number of international human rights treaties and conventions. The latest convention signed by South Africa on the 30th May 2007 is the United Nations Convention on the Rights of Persons with Disabilities (2006). The purpose of the Convention is to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity.

All the countries that signed the convention are bound by that convention. It suffices to highlight some of the principles that are provided by the UN. In summary, the UN Convention is based on the following principles:

- Respect for inherent dignity, individual autonomy, including the freedom to make one's own choices, and independence of persons
- Non-discrimination
- Full and effective participation and inclusion in society
- Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity
- Equality of opportunity
- Accessibility
- Equality between men and women
- Respect for the evolving capacities of children with disabilities, and respect for the right of children to preserve their identities.

The South African Constitution (1996), as the supreme law of the country, protects the rights of people with disabilities. The Constitution accepts that discrimination against a person on the basis of that individual's disability is automatically unfair unless a case can be proved by the body or individual concerned that the discrimination was fair. Provision is made in the Constitution for affirmative action concerning people with disabilities in that it allows for positive measures to be taken to promote the achievement of equality for categories of persons disadvantaged by unfair discrimination. By implication, therefore, the denial of any other Constitutional right on the basis of disability constitutes a violation of a disabled person's right, as noted earlier.

Further enabling legislation such as the Integrated National Disability Strategy White Paper (1997) by the Office of the Deputy President provides a framework from which integrated and coherent policy can be developed across all spheres of government to address the social, economic and political inequalities that marginalise people with disabilities from mainstream society in South Africa. The paper advocates for a paradigm shift in the approach on issues of people with disabilities; from the medical to a human rights and equitable development (social) model which is [an]

emancipatory approach. It envisions 'a society for all'; one that encompasses human diversity and the development of all human potential, and this includes students with disabilities. The policy requires institutions of higher learning to alter their service delivery so that it responds to the needs of disabled persons.

In July 2001, the Ministry of Education published White Paper No.6 entitled Special Needs Education: Building an Inclusive Education and Training System. This policy outlines the Ministry's commitment to the provision of educational opportunities for 'those learners who experience or have experienced barriers to learning and development' and, as a result, have either been excluded from accessing existing education provision or have dropped out of the learning process (Department of Education 2001). White Paper No. 6 asserts that these inequalities have arisen because of a failure on the part of the system to meet 'a broad range of learning needs (that exist) among the learner population in any point in time' (Department of Education 2001).

The Department of Education system's inability to accommodate particular learning needs results in some learners being either excluded from the system or experiencing learning difficulties within the classrooms or lecture theatres, which prevent effective and sustained access to the curriculum (Department of Education 2001). White paper No.6 places particular emphasis on addressing the needs of learners with disabilities, who are recognised as having been the most vulnerable to the inequalities described above.

2.2.4 UKZN Policy on Students and Staff with Disabilities

Disabled people in South Africa have been through a long and arduous fight to have their rights recognised and to overcome marginalisation and exclusion. They have made considerable progress working together proactively (DPSA 2001), not just as recipients, with government. As a result the policy environment in South Africa is potentially enabling and provides a framework for preventing violations of the human rights of disabled people wherever they are. This includes institutions of higher learning.

The UKZN, in response to the afore-mentioned legislations in Section 2.2.3 and endeavours by the disabled people in South Africa, committed itself to an enabling environment to all students and staff by enacting the UKZN Policy on Student and Staff with Disabilities in 2004. The UKZN policy is aimed at, among other things, making tertiary education and working environments universally accessible and inclusive for all students and staff with disabilities in the institution. It further states that UKZN is equally committed to focussing its energy and resources towards the removal of cultural, physical, social and other barriers that prevent people with disabilities from entering, being employed, using or benefiting from the university. This policy is in accordance with Section 54(1) (a) of the Employment Equity Act No.55 of 1988 and is based on the grounds of rights of people with disabilities. The policy acknowledges and is in compliance with, the Code of Good Practice: key aspects on employment of people with disabilities, the Higher Education Act of 1997, the White Paper No.6 on Education and other relevant legislation.

Whilst such measures are obviously important and are greatly applauded, it is worth mentioning that the policy on its own can not bring about change. The policy has to be implemented so that all the concerned parties benefit from it. In the case of UKZN, Section 8 of the Policy on Student and Staff with Disabilities 2004 states that:

Responsibility for implementation of the policy will vest with every member of staff. All Deans and the Heads of Support Divisions are accountable to the Vice-Chancellor and shall be required to cooperate fully with the Diversity Manager and Executive Director Equity to ensure compliance with this policy (UKZN 2004).

The United Nations Handbook (2000: 27), observed that what happens within higher institutions of education in terms of providing services equitably remains the most important determinant of whether students with disabilities, and in fact other historically disadvantaged students, have a fair chance to succeed in their studies, which thus requires that they have equitable access to all benefits of the institution. This includes developing and monitoring the system's capacity to respond to a greater diversity of learning needs, where learning needs refer to what each learner requires to participate effectively within the process of teaching and learning and thus have

access to the process of knowledge production within the academy. In the same line of thinking Philpott (2008) argues that not unless there are penalties relating to lack of implementation of policies at UKZN, those who are tasked with such can either do it or not.

In other words, as Davies (2007) advised, if equity in institutions of higher education is to be a reality for all students or potential students in our country, there is a need to start thinking and speaking differently about these issues and, in so doing, transform the structure and functioning of the institutions so they reflect the new discourse in the undertaking of their core business. In essence, students with visual impairments should be provided with opportunities not only to enter higher education programmes but also to succeed in them.

2.2.5 Information seeking behaviour

Information seeking behaviour is viewed by Wilson (1999) as a broad term encompassing the ways individuals articulate their information needs, seek, evaluate, select, and use information. In other words, information seeking behaviour, as Wilson (1999) further elaborated, is purposive in nature and is a consequence of a need to satisfy some goal. Case (2002: 5) described it as a conscious effort to acquire information in response to a need or gap in one's knowledge. In the course of information seeking, for example, the visually impaired students may interact with people, with manual, or with computer-oriented information systems.

According to Pettigrew (1996), information seeking behaviour involves personal reasons for seeking information, the kinds of information required as well as ways and means of finding it. In all the definitions, an emphasis is on a crucial drive. To further clarify this phenomenon, three concepts have to be looked at namely information need, seeking and information use. These concepts will be discussed in light of the population under study which would be either specific to students with visual impairments or students with disabilities.

There are statements in the literature extolling the importance of information for people with disabilities. The following statement is typical; it is from an article about increasing access to, and use of, disability-related information:

Information/knowledge is power (when shared). The ability to obtain and use information about any subject gives a person the opportunity to choose a path from many alternatives instead of being limited to a few perhaps unwanted or unfeasible choices (Fullmer and Majumder 1991:7).

2.2.5.1 Information needs

The concept 'information need' has been seen by numerous scholars as abstract and intangible, for example, Case (2002), Maepa (2000) and Aina (2004) to mention a few. The abstract and intangible nature of 'information need', is attributed by these authors to the difficulty defining the concept clearly.

Information need is defined by Case (2002:5) as a recognition that your knowledge is inadequate to satisfy a goal that you have. On the other hand, Kaniki (1992: 84) saw it as a lack of desired commodity (that is, information) necessary to deal with a situation as the individual sees fit. Going back to the late 1970s, Belkin (1978: 56) observed that an information need arises when a person recognises something is wrong in his or her state of knowledge and wishes to resolve it. Students with visual impairments find themselves in a condition that triggers the need to seek and use information, for example, the students constantly find themselves in need of information to write assignments, essays, tests and any other academic related information. According to van de Wijngaert (1999: 44) the theory underlying the concept of information need arises from the recognised anomaly in the users' state of knowledge concerning some topic or situation. In response to the anomaly, the person will employ strategies to satisfy the need.

A need therefore, in Maepa's (2000: 11) words, implies that something is inherently indispensable and cannot be done without and that an information need is situation specific. For example, in the case of visually impaired students, the student may want to know what assistive services are provided by the disability unit. When the student

gets the right information, she or he will be able to utilise those services to assist with her or his academic career.

Thus, in order to meet the individual and disability-specific needs of students with visual impairments, there must be available a full array of program options and services (Davies 2007). Educational needs that are specific to these students must be addressed throughout their school experience. Educators of students who are visually impaired should know prior to enrolling at the University that the only manner in which the unique, individual needs of students could be met is to provide choices for delivering specialised services. Service providers should know that all students have the same educational needs (do the same courses) but not all can make full use of the learning information services provided in teaching situations or access the information provided by the university to support their learning because of barriers presented by the manner in which the university operates. Nevertheless, as mentioned above, there is little known about the broad spectrum of information needs for everyday life of people with disabilities.

The educational needs of students with visual impairments will vary depending on their level of study, particular degree and age of the student. Consequently, the required information services will vary according to the students' degree of sight impairment as well the extent to which they personally encounter barriers. Case (2002: 114) advised that there will be occasions for most students when time outside the regular classroom will be extensive, such as when starting to learn Braille, expansion of orientation and mobility skills, career education, social skills, or times when skills relating to living independently need to be acquired. Such opportunities for learning may require pull-out time, or a special class placement, or a residential school placement for a period of time. Irrespective of their impairment every individual has needs which will not be similar to others. In addition, individuals' needs are often specific to a particular situation to be met at a certain time. In such instances a 'one-size-fits all' approach to the provision of services should not be adopted not unless the services are universally designed.

An appropriate assessment of these unique educational needs in all areas related to a student's disability and instruction adapted to meet these needs is essential to ensure

appropriate educational programming. In other words, it can be said that these students have sophisticated needs. For example, it is important to realise that the student who is visually impaired must accomplish the same work as his sighted peers using disability-specific skills which generally require greater time to master in order to tackle tasks which take more time to complete. Both the reading and writing of Braille, even by a proficient Braille user, is time consuming.

2.2.5.2 Information seeking and access

Case (2002: 5) defines 'information seeking' as a conscious effort to acquire information in response to a need or gap in ones' knowledge. During the information seeking process, several factors are at play such as identifying, choosing and locating a likely information provider that will satisfy the information needs of that particular person. In the same line of thinking, Maepa (2000: 13) clarifies the concept as one which is concerned with who needs information, what kind of information is needed, the reasons for its need as well as how that information, once found, is evaluated and eventually used.

Everyone has a different set of strategies for finding the information they need for their daily living. This is also the case for the blind or visually impaired person. Kupperts (2004: 97) concurred that life circumstances, such as being alone or having a family, working, or being unemployed, or retired, the format of vision impairment involved, as well as individual information-seeking preferences, all influence the ways in which people seek or incidentally acquire information.

There is considerable emphasis by Davies (2007) on the key role which information plays in the lives of people with disabilities. There is also considerable recognition of the fact that information is not easily accessed by everyone, and this is particularly true of a large number of people with visual impairment. For example, the fact that information is there for a student with visual impairment is not enough. The crucial question is whether that particular information is accessible in a usable format to the student with visual impairment, using any information seeking behaviour he or she chooses.

According to Edwards and Lewis (1998: 302), access to the printed word has long been recognised as a significant barrier to the integration of visually impaired individuals into school and work environments. On the same line of thinking, Luxton and Lewis (1990: 302) said that standard print ‘slows them [people who are blind and vision impaired] down and often makes them dependent on other people.’ Although history indicates that the presentation of information has not shown much consideration for the needs of people with disabilities, in the current era, the computer and Internet look far more promising than standard print provided the right interface and programmers suitable for the visually impaired are in place. For example, a blind student can read information in Microsoft word format through the use of JAWS.

Not only does access to the Internet increase access to information for people who are blind or have vision impairments, as Fullmer and Majumder (1991) noted, but it also allows them to participate in a new information and communication format. The Internet has the potential to become a primary source for all people. In this way, people who are blind or vision impaired will not see themselves as different from the rest of the population. Much as the above mentioned statement could be true, but the proper interface factor is a challenge. Most libraries, including the UKZN, have sophisticated systems (programmes and software) that help students in locating library materials, databases, e-journals and other electronic sources of information, but the truth of the matter is that not every student, particularly those with visual impairment benefit from the availability of such sources as they are expected to click, drop and drag using technology that depends on sightedness.

There is on-going work on making interfaces accessible to people with visual impairment. For example, work done by the Royal National Institute for the Blind and the World Wide Web Consortium (W3W). General work on information seeking behaviour and the use of interfaces still stresses visual capabilities which students with visual impairments do not possess. Universal design in this regard seems to be the solution to the design of websites. In summary, principles of universal design according to Rains and Min (2008) are as follows:

- Equitable Use: The design does not disadvantage or stigmatise any group of users;

- Flexibility in Use: The design accommodates a wide range of individual preferences and abilities;
- Simple, Intuitive Use: Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level;
- Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities;
- Tolerance for Error: The design minimises hazards and the adverse consequences of accidental or unintended actions;
- Low Physical Effort: The design can be used efficiently and comfortably, and with a minimum of fatigue;
- Size and Space for Approach & Use: Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility.

2.2.5.3 Information use

Users' information needs are ultimately a need to resolve known gaps in their knowledge. As argued earlier in this chapter, resolving users' information needs involves identification of relevant information for the task at hand. If use of identified information is hampered, resolving known gaps in knowledge also fails. In this way use of information is directly related to understanding and meeting the information needs of users.

Information use is a behaviour that involves an individual using information in order to meet his or her information needs. Pezeshki-Rad and Zamani (2005) pointed out that individuals do not use all the information they need partly because they are not always able to obtain what they need, partly because the materials may not be relevant when they obtain them or partly because individuals sometimes do not know what

they need. For the information seeking behaviour process to be complete, the information found must satisfy the users' needs, failing which the search process must start all over again. See Figure 2.

2.2.6 Studies on information seeking behaviour of visually impaired students or people

Studies chosen for this research were those that discuss the information seeking behaviour of different categories of visually impaired people internationally and nationally. International studies chosen were those about visually impaired users, blind or vision impaired people. More specific studies that were chosen were those conducted nationally about the information seeking behaviour of visually impaired students at tertiary institutions.

A study of information seeking by visually impaired people based in Melbourne, Australia was the subject of a research project by Information and Telecommunication Needs Research (ITNR 1995). It cast some valuable light on why information is needed as well as how it is accessible to visually impaired people. The questions asked addressed the information needs of sight-impaired people, how those needs are met and what the barriers to the use of the internet are. Evidence was gathered through a combination of focus groups and interviews that included both urban and rural participants. The predominant information needs identified were those covering health and finance matters.

Another example of asking visually impaired people directly what they need and do about accessing and their use of information in general is a survey undertaken by the Library and Information Statistics Unit (LISU) at Loughborough University in the UK (Davies, Wisdom and Creaser 2001). The visually impaired people were surveyed through structured interviews and were subsequently shared with agencies concerned with visually impaired people and to acquire additional information regarding service provision and demand. Evidence was gathered on visually impaired people's preferred formats for accessing information and on their use of information technology. The results indicated that, in general, services received very positive

responses from current users in terms of overall user satisfaction. Areas where scope for improvement were identified included promoting services and publicising.

The Canadian National Institute for the Blind (CNIB) (1996) undertook a study to investigate needs of visually impaired people in a two year study. The study used focus groups, interviews and surveys in order to gather information on the challenges associated with living with impairment and the adequacy of the support provided by social and rehabilitation agencies. The study explored a range of issues, including income levels, employment, education and social integration of visually impaired people, as well as services provided and required to fulfil unmet needs. A significant outcome was a recommendation to integrate accessible library services into the standard library system.

Brophy and Craven (2007), Atinmo (2007), Venter and Lotriet (2005) studied how visually impaired users interacted with and accessed information using communication technologies (ICTs). The studies reported that the group of people who are likely to be disadvantaged by websites are those for whom websites have been designed without taking their needs into consideration, such as those who are visually impaired. A common theme that can be traced through these studies is that, despite the awareness of accessibility issues and the importance of accessible services, there is still lack of understanding relating to the specific reasons for applying accessibility features to website, for example, a lack of knowledge of how to implement them systematically and effectively. From the literature it appears that a question that lingers on is that, could this be the reason that some services at most institutions of higher learning still do not meet accessibility requirements? There is therefore a need for design features enabling access by all.

In terms of more specific research, Astbrink's (1996) study explored consumer information needs of people who are blind or vision impaired. This was done in relation to products, services or public information from bodies such as telecommunications companies, banks and government departments. Using focus groups of consumers, the researcher examined gaps in knowledge of services and products on offer. Preferences for formats and technological solutions were also investigated. In terms of formats, it was found that people will have their favourite

formats based on their personal circumstances such as degree of visual impairment, onset of vision impairment, living arrangements, age, level of literacy and nature of the material or information to be accessed (Astbrink 1996: 5).

In another specific study, the Royal National Institute for the Blind (1999) investigated the financial information needs of blind and sight-impaired people. This study focused on the useful design features for financial information. It was found that a large proportion of people who were receiving their financial information in standard print would prefer large print. However, younger participants were more likely to want to read Braille or a computer disk.

Davis (2000) explored the information seeking behaviour of undergraduate students in general at the University of Western Cape and their perceptions and conceptualisation of information and information retrieval systems. The experimental mode of data gathering was used and data collection methods included think-aloud protocols and videotaped interactions with users of information retrieval systems. Preliminary findings concluded that students need to be observed while doing information searches. The formulation of search strategies by students and their perceptions on how they conceptualise the actual services using information retrieval systems at the University of Western Cape needed to be investigated.

A similar study to the current one was carried out by Shunmugam (2002). The research explored barriers as experienced by visually impaired students at the then University of Natal. The attitudes of the university/ student population were also examined. His mode of data collection was interviews with semi-structured questions and literacy documentation. The results revealed that most of the identified problems such as inaccessible information services and attitudinal barriers from the university community were not specific to a campus, but rather related to the university as a whole.

On the same line of thinking, Budricks (2007) did a needs assessment on visually impaired students at the UKZN-PMB. The focal point of this study was on problems, limitations and difficulties encountered by visually impaired students, the available services of the DU, the accessibility of technological resources and the identification

of limitations of the available services. Data was gathered through the use of structured and semi-structured interview schedules. Although Budricks (2007) did not include the attitudes of the university population to visually impaired students, the results yielded were similar to those that were raised by Shunmugam (2002).

Similarly, there is a real need to address attitudinal barriers at all levels of the institution that continue to locate the 'problem' of disability (with perceived personal limitations) in the learner rather than the limitations of the system with its inability to meet the full range of learning needs among the student population.

2.3 Summary

This chapter presented the conceptual framework for this study. The literature review covered the major aspects of the study which are disability (visual impairment) and information seeking behaviour. The chapter concluded by presenting studies on information seeking behaviour of various categories of visually impaired people. Where applicable, significant points identified in the literature review will be drawn on in the interpretation and discussing of the results.

Chapter 3: Research methodology

3.0 Introduction

The purpose of this chapter is to present the research study design and methodology as well as the techniques applied in the research. The nature of this study is qualitative, with some quantitative elements, as it focused on obtaining in-depth information about the information seeking behaviour of students with visual impairments. A case study approach was used to answer the research questions presented in Chapter 1. Within the case study, various methods were used to gather data such as the semi-structured interview and survey questionnaire. The chapter further details information about the three categories of the units of analysis used in the study and how they were obtained. Data collection and analysis procedures are presented. Evaluation of the research methodology is also provided.

3.1 Choice of method

Research methodology revolves around two major approaches; quantitative and qualitative (Powell 1999: 3). The quantitative approach involves collecting numerical data that can be counted while the qualitative approach involves methods that collect verbal or textual data. Despite the differences between the two, there has been a growing emphasis on combining the two approaches in a single study which is called methodological triangulation.

Methodological triangulation has been described by Denzin in Babbie and Mouton (2001: 257) as the use of two or more methodologies of data collection procedures within a single study. The same concept is further simplified in *Understanding research...* (2004: 135) as to the collection of data from a number of different sources. For example, in this research, the study seeks to find out more about information seeking behaviour of students with visual impairments, which includes exploring their information needs, seeking and use of information. The nature of the study (qualitative) required that information be solicited from the service providers and the students who were expected to use those services. More specifically, information was

obtained from the students who were the users, the Subject Librarians and DUC who were the service providers. Collecting data from the three units of analysis enabled the researcher to see whether the data collected from one source confirms or contradicts the data collected from a different source. Students' information seeking and use are essentially process-oriented activities conducted in a natural, everyday context. In many earlier studies (Kuhlthau, 1991; Neuman, 1991, 1993, 2001, 2002; McGregor 1993; Pitts, 1994; Arter et al., 1999 and Large & Beheshti, 2000) investigating information seeking and use for learning purposes employed qualitative research methods.

3.2 Case study approach

The research methodology used for this study was the case study approach. Hart (2005: 326) defines a case study as 'a focus on a single case (person, group, settings etc.) which allows an investigation of the details, including contextual matters of a phenomenon'. On the same line of thinking, Allison *et al.* (1996) concur that case studies are in-depth examinations of particular events, circumstances or situations which offer the prospect of revealing understandings of a kind which might expect broader surveys. In a nut-shell, a case study has the ability to deal with a full variety of evidence and provide an opportunity to study a situation within its context.

The case study is defined by Welman, Kruger and Mitchell (2005: 26) as an empirical inquiry that investigates a contemporary phenomenon within its real life context; when the boundaries between phenomenon and context are not clearly evident and where multiple sources of evidence are used. Babbie and Mouton (2001: 49) pointed out that case studies are appropriate for research that aims to provide an in-depth description of a small number of cases. The case study focuses on a single unit or case and seeks to describe the situation in order to achieve a comprehensive understanding of the events under study. The case study approach was found to be suitable for this research as it was mainly concerned with describing the situation of a particular phenomenon.

This approach suited the research problem as it seeks to understand comprehensively the information seeking behaviour of students with visual impairments. The case

study did not focus on seeking frequencies of occurrences, but in seeking significant insights into the information seeking patterns of the students thereby offering an insight into the provision of services for students with visual impairments. It also has strength in its ability to deal with a variety of evidence such as documents, artefacts, interviews and observation (Leedy and Ormrod 2001: 93). The results of the study, in Cohen, Manion and Morrison's words, (2000) may not be generalised but could be significant as they provide an holistic in-depth investigation of the population under study. The case study involved identifying the students' information needs, seeking behaviour and use.

3.3 Research population

The research population is considered a critical part of any survey. A target population consists of all elements or units of analysis about whom survey information is collected. In social scientific research there is a wide range of variation in what or who is studied, what is technically called units of analysis. Units of analysis are defined by Welman, Kruger and Mitchel (2005: 25) as those we examine in order to create summary descriptions of all such units and explain differences among them. Three different populations were targeted for this study, the visually impaired students, Subject Librarians (from Cecil Renaud which is the main library at the UKZN PMB campus) and the DUC.

3.3.1 Visually impaired students

The first elements of analysis were the visually impaired students who fitted the following criteria, which were also those used by Shunmugan (2002:34-35):

- They were either totally blind or visually impaired;
- They were currently registered students at the UKZN-PMB;
- They were known by the Disability Unit of UKZN-PMB and registered as blind or visually impaired; and
- They utilised or required one or more of the specialised support services made available through the DU to facilitate their learning and integration at campus.

In consultation with the DUC, it was found that there were initially ten students who met the above mentioned criteria. However, one of them was not interviewed because the interview schedule was pre-tested on her and it was discovered after the pre-testing that she was registered with the DU. Lindo² was known to the researcher as one of the students who had visual impairments but was not registered with the DU. This left the researcher with nine students who were all interviewed. However, in accordance with ethical principles of research (Babbie and Mouton 2001: 521; UKZN Research Policy 2007), none of these students were forced to participate. They were made aware, through the DUC, of the researcher's identity, nature of study, the motivation behind the study and their expected level of involvement in the study. All the elements in the population were asked to participate; therefore no sampling strategy was employed.

There were two other 'populations', the Subject Librarians and the DUC. They were used as key informants in accordance with the definition of Babbie and Mouton (2001:643) that an informant is someone well versed in the social phenomenon that you wish to study and is willing to tell you what he or she knows.

3.3.2 Subject Librarians at Cecil Renauld library

The second elements of analysis were the seven Subject Librarians at the Cecil Renauld Library on the PMB main campus. They were chosen because the aspects of information seeking behaviour, that of information needs, seeking and use, relate to services provided by the library. Semi-structured questionnaires were distributed to them.

3.3.3 DUC at UKZN-PMB campus

The DUC was the last unit of analysis. She was chosen because the DU's aim is to assist students with disabilities in realising their greatest academic potential and to

²Pseudonym for the visually impaired student the interview schedule was pre-tested on. The researcher approached and requested to pre-test the instrument on her which she agreed. However, for some reason just before the pre-testing she registered with the DU. After the pre-testing, the researcher telephoned the students who were on the list, only to discover that Lindo had just registered using her second name which was not popularly known on campus.

maximise opportunities for their personal growth and development. The DU's aim is achieved by offering different services to visually impaired students, as mentioned in Chapter One. The DUC was also given a questionnaire.

3.4 Data collection methods

Semi-structured interviews and questionnaires were used as data collection methods for this study. Ngulube (2005: 136) observed that although no single method is perfect, if different methods lead to the same answer, then greater confidence can be placed in the validity of the conclusion.

3.4.1 Semi-structured interviews

The qualitative aspect of the study was facilitated by semi-structured interviews with the visually impaired students in a face-to-face setting which is, according to Babbie and Mouton (2001: 249) the most common method of collecting survey data. Holstein and Gubrium (2003: 176) defined an interview as 'an in-depth conversation between two participants and the researcher'. Conducting an interview is a more natural form of interacting with people than making them fill out a questionnaire (Terre Blanche 2006: 297).

Interviews were used in the study in order to get to know the students quite intimately, Terre Blanche (2006: 297) elaborated that 'so that we can truly understand how they think and feel'. A structured interview was found to be more appropriate for this particular population of visually impaired students. It is defined by *Understanding research...* (2003: 86) as a structured conversation where the researcher has in mind particular information that she or he wants from the respondent and has designed particular questions to be answered. As the study employed this technique, an interview schedule, which is a set of questions in a predetermined order, was used.

Through the use of the interviews, a critical incident experienced by the students was explored. For example, question five of the interview schedule, whereby the students were asked to describe an instance where they had a need to find information. This technique examines a brief, but memorable information seeking episode (Case 2002:

105). The students were asked for details of their experience of an information seeking incident, or were presented with a realistic scenario of their information seeking behaviour. Davies (2007) opined that the critical incident approach seems more likely to elicit a more valid interpretation of information behaviour than might be obtained from asking about frequency of information source use.

The critical incident technique in Maepa's (2000: 68) words, 'allows for explanation, probing, and trustful communication in the respondents' words'. It therefore requires the respondents to think of a problem or any difficult situation they were confronted with in the recent past, which required them to acquire information, and consequently, knowledge to enable them to make a decision or solve that problem. In so doing, the students had greater flexibility in identifying the formats of needs and information seeking situations than would have been the case if a list of fixed options had been provided by the researcher. A major criticism of the critical incident approach as Kaniki (2001: 195) points out is that it heavily depends on the respondents' memory and his/her ability to remember important events. However, a counter argument to this is that people will often remember what they consider to be critical to them, however non critical others may consider these situations to be.

Some of the benefits of semi-structured interviews are that they are conducted with a fairly open framework which allows for focused, conversational and two-way communication. Case (2002) adds that they can be used both to give and receive information. Additionally, semi-structured interviews provide a very simple, efficient and practical way of getting data about things that can not be easily observed; for example, feelings and emotions. One of the down-sides of using semi-structured interviews according to Cone and Foster (1998: 20) is that they depend on the skills of the interviewer. For instance, the ability to think of questions during the interview and articulate them to the interviewee may not be as easy as one may anticipate. In this study, no research assistants were employed, all the interviews were conducted by the researcher.

3.4.2 Questionnaires

The quantitative aspect of the study was facilitated by semi-structured questionnaires. The nature of the study is largely qualitative. The questionnaires were semi-structured with only a few questions in the questionnaires being close-ended. The close-ended questions in the questionnaires largely collected background information of the respondents. Close-ended questions in Gillham's (2000: 45) words, allow the respondent to choose from a list of predetermined options. For example, questions 1 and 5 in the Subject Librarians' questionnaires were close-ended. That is to say, the respondents were asked to make a selection from a list of options provided. According to *Understanding research ...* (2004: 82) a semi-structured questionnaire asks more open-ended questions whereby the respondents are not given any categories to choose from, and they may answer, in their own words (Cone and Foster 1998: 121). Open-ended questions were asked to encourage a full, meaningful answer using the subject's own words, knowledge and feelings. They tend to be more objective and less leading than closed-ended questions. In fact, they are the opposite of a closed-ended question, which encourages a short or single-word answer. For example, nine out of eleven questions for the DUC used in the study were open-ended questions.

For the survey of Subject Librarians and the DUC, self-administered questionnaires were used. As Lewis-Beck (1994: 3) points out, a self administered questionnaire could be used with or without the researcher. The questions that were asked in the questionnaires were based on the research questions this study sought to answer. Questionnaires have advantages over some other formats of surveys in that they are cheap, do not require as much effort from the interviewer as do verbal or telephone surveys, and often have standardised answers that make it simple to compile data (Gillham 2000; Cohen, Manicon and Morrison 2000 and Terreblanche; Durrheim 1999). Further, the respondents are allowed to answer questions at a time that is convenient to them (Babbie and Mouton 2001: 262).

Self administered questionnaires are also limited by a number of factors (Kothari 2004: 113) such as the fact that respondents must be able to read the questions, (understand) and respond to them. The disadvantages pointed out by Kothari can be overcome by having questions worded so that they are easily comprehended by the

respondent and do not need any further clarification by the researcher. The disadvantage of questionnaires is that they have a low response rate as people sometimes do not return them and, according to Lewit-Beck (1994: 8) those who do return them may not be truly representative of the population. Another disadvantage that questionnaires have is that there is lack of control over how respondents interpret questions and a lack of opportunity to probe or correct misunderstanding. The questionnaires in this study were personally delivered and collected, as mentioned, which resulted to a 100% response rate.

Questionnaires were delivered to the seven Subject Librarians and arrangements were made to collect these after five days. The use of the questionnaires was found to be very effective and relevant to the study because the population under study was adequately literate (Babbie and Mouton, 2001: 258).

The DU was given a questionnaire which was collected by the researcher at a time they had both agreed upon. Delivering and collecting questionnaires is viewed by Babbie and Mouton (2001: 259) as contributing to a high completion rate.

3.5 Pre-testing of research instruments (interview schedule and the questionnaire).

Before data collection, the questionnaire and the interview schedule were pre-tested to eliminate any ambiguities and mistakes. Babbie and Mouton (2001: 244) warned that no matter how carefully one designed a data collecting instrument there is always a possibility of error. Pre-testing gave the researcher a chance to identify questionnaire items (from both the survey questionnaire items and the interview schedule) that did not elicit the information needed, had poor instructions or missing questions.

3.5.1 Pre-testing of the interview schedule

The interview schedule was pre-tested on one of the visually impaired students who was not registered with the DU. The student was specifically chosen because she had visual impairments but initially did not meet the selection criteria the other visually impaired students met as mentioned in Chapter 1.

3.5.2 Pre-testing of the survey questionnaire schedule

The questionnaire was pre-tested with a Subject Librarian from the Life Sciences library and a staff member from the Information Studies Programme of the UKZN-PMB. The Subject Librarian whom the questionnaire was pre-tested on was chosen because he was a well experienced Subject Librarian in the same institution but working at Life Sciences Library UKZN-PMB. For those reasons, he was better positioned to pick errors, ambiguities with regard to service provision at the UKZN library. This exercise gave the researcher a chance to identify questionnaire items that did not elicit the information needed, poor instructions and missing questions. The member of the Information Studies staff was chosen because he was accessible and had consented to participate in the pre-testing.

3.6 Data analysis

In terms of the data analysis, Durrheim (2002: 47) states that it is important to ensure that the format of data analysis which is employed matches the research paradigm and data, and can answer the research question. As mentioned earlier, data that was collected for this study was largely qualitative with few quantitative elements. Data analysis was carried out differently for both quantitative and qualitative data (*Understanding research* 2004: 14). Consequently, the analysis of quantitative data involved cleaning, coding, entering and descriptive analysis as Durrheim (2002: 98) observes. This was done through the aid of SPSS, a software programme.

Babbie and Mouton (2001: 249) point out that there is no one neat and tidy approach to qualitative data analysis, nor even one approach to each specific format of qualitative data analysis. Specifically, Cohen, Manion and Morrison (2007: 283) state that analysis of qualitative data is almost inevitably interpretive. Data from the interview schedules and the open-ended questions from the questionnaires were first analysed by theme before they were coded. This analysis constitutes a form of content analysis, which according to Ngulube (2003: 229) is collecting and organising information systematically in a standard format that allows analysts to draw conclusions about the characteristics and meaning of recorded material. The first step in content analysis entails the construction of categories that are described by

Sarantakos (1998: 281) as a set of criteria which are integrated around a theme. In that light, data was analysed according to themes such as, but not limited to, situations of need, source and format of information and strategies employed to meet the information need. The categories were examined using one of content analysis' basic methods, namely, conceptual analysis or thematic analyses. The analysis involves quantifying and tallying the presence of a concept. Categories are coded and dominant themes and trends are identified.

3.7 Evaluation of the research methodology

As mentioned, the purpose of this study was to investigate the information seeking behaviour of students with visual impairments at the UKZN-PMB campus. The investigation was conducted in order to ascertain whether the services that are provided by the university meet the students' information needs or not, and to identify barriers that they come across as they seek information. It was anticipated that the recommendations of this study would contribute to the university providing more appropriately for the information needs of students with visual impairments. Leedy and Ormrod (2001: 34) maintain that no matter what research methodology has been chosen for a study, the researcher needs to consider the validity and reliability of the approach used. The bias acknowledged by the researcher is that only students who met the criteria were interviewed. The possibility of other students at UKZN-PMB with visual impairments could not be ruled out, however there was no other ethical way of identifying such students that complied with the University's Code of Ethics.

3.7.1 The reliability and validity of the instrument

An assessment of the data hinges upon determining the reliability and validity of the research instruments used. Cohen, Manion and Morrison (2000: 106) caution researchers against threats to validity and reliability which can never be eliminated completely. The authors suggest what can be done during design, data gathering, data analysis and data reporting, to try and minimise the threats.

3.7.1.1 Reliability

Reliability is described by Babbie and Mouton (2003: 119) as a matter of whether a particular technique applied repeatedly to the same object would yield the same results each time, that is, provides consistent or precise data. The data collection methods that were used in this study (interviews and semi-structured questionnaires) have been applied in similar studies (see Chapter 2), where they proved to be reliable. In this study, care was taken to ensure reliability by means of pre-testing instruments and by using methodological triangulation.

3.7.1.2 Validity

Validity includes the selection of an appropriate methodology suitable to answer the research questions, selection of appropriate instruments for collecting the data and an appropriate sample (Locke, Spirduso and Silverman 1993: 43). In an attempt to achieve validity in this study, the instruments used to collect the data had an adequate coverage of the research questions guiding the study. Pre-testing of the interview schedule and the questionnaire (Babbie and Mouton 2001: 244) was done as mentioned in section 3.5.1 and 3.5.2 respectively.

3.8 Summary

This chapter presented a methodology that was used to establish the visually impaired students' information seeking behaviours which assisted in determining whether the services that are provided by the UKZN-PMB met their information needs or not. The research population and justification of the choice were discussed. The chapter further looked at data collection methods, pre-test details followed by a discussion on how the study ensured reliability and validity of data. An overview of data analysis was provided as was an evaluation of the research methodology.

Chapter 4: Results

4.0 Introduction

The purpose of this chapter is to present the results drawn from semi-structured interviews with visually impaired students and self-administered questionnaires given to Subject Librarians and the DUC at UKZN-PMB. The results are organised according to the research questions that were identified in Chapter One Section 1.3.2., and drawn in particular on the semi-structured interviews with the students with visual impairments. The purpose behind each question that was asked is explained and the results are given.

4.1 Response rate for the three categories of respondents

Nine students with visual impairments who met the selection criteria mentioned in Chapter One Section 1.5 were all interviewed as reported in Chapter Three which led to the 100% response rate. Questionnaires were also distributed to seven Subject Librarians and the DUC and they were all returned yielding a 100% response rate. This high response rate is explained by the fact that the Subject Librarians and the DUC were individually approached by the researcher to participate in the study and that the questionnaires were delivered and collected by the researcher.

4.2 Results from the interviews of the visually impaired students

The results of the interview are organised according to the key questions that the study seeks to answer, which were mentioned in Section 1.3.2.

4.2.1 General information

A total of four questions (questions one to four) in the interview schedule were designed to gather information on the characteristics of the respondents. The respondents' characteristics helped the researcher to have a clear picture of the

population under study. The questions included gender, age, level of study and category and residence.

4.2.1.1 Gender and age

The respondents were asked to specify their gender and age. These questions were asked to ascertain the number of students who were male or female which provided a better understanding of the population of students under study.

Of the nine students who were interviewed, the majority, five, were male and four were female.

Table 1. Age and gender distribution (frequencies) of visually impaired students interviewed in the study

Gender	Age (years)				Total
	21	22	23	24	
Male	2	1	1	1	5
Female	1	1	0	2	4
Total	3	2	1	3	9

The respondents' ages ranged from 21 to 24, that is, three were 21 years old, two were 22 years old, one was 23 years old and three were 24 years. The respondents' gender and age is further depicted in a Table 1 above.

4.2.1.2 Level of study and category (full- or part-time)

The respondents were asked to specify their level of study and category, that is whether they were full time students or not, in order to make a distinction between undergraduate and postgraduate students and to ascertain whether the students' level of study and category had an impact in their information seeking behaviour or not. Of the students interviewed, the majority (six) were undergraduates while only three were postgraduates (Table 2).

Table 2. Distribution of students' number by level of study and category of study (full- time or part-time)

Level of study	Category		Total
	Full-time	Part-time	
Undergraduate	5	1	6
Postgraduate	3	0	3
Total	8	1	9

Of the six undergraduate students interviewed, all but one was enrolled for full-time study whereas all the postgraduates were full-time students.

4.2.1.3 Residence

The student respondents were asked whether they were staying in the university's residences or not. Eight respondents were staying in the institutions' halls of residence and only one was staying in off-campus accommodation.

4.2.2 Respondents' information needs

The questions (six to eight) were asked in order to find out about the students information needs and the various factors that influence their information behaviour.

4.2.2.1 Information seeking situations

The respondents were asked to describe instances where they needed information to solve a problem or make a decision. To enable the respondents to remember their information needs, the critical incident technique was used.

The study revealed that the most commonly held need was related to academic issues. That is, all the respondents (100%) had academic needs at the top of their list. This, in essence is indicative of the fact that although students' needs are varied, academic

information needs form a fundamental part of every student's life, as alluded to in the first chapter of this study (Section 1.2).

All the nine respondents revealed that their critical incident was related to a need for academic information including where to find relevant sources to do their assignments. For example, one of the students said:

The lecturer gave us an assignment and to most sighted students the first stop was the library and for me it was the DU, where my assignment sheet was read to me... then I tried to figure out what to do next... you see this is unfair... by the time I start writing the others would have submitted.

Where other students accessed the information immediately and decided what was important, blind respondents had to first scan an article, for example, before it could be edited and then emailed to them so that they could access it through JAWS.

Three other students alluded to the same concern and added that 'unfortunately one was expected to submit on the same date as the sighted students... extension of time for submission was the only option for us, but then it meant putting up with a backlog as the assignments are not from one module'. When the students take their work to the DU, the students indicated that most of the time their work had to be read by student assistants who work on shifts 'and one has to get used to [a] different accent' as it is not always possible to find the same student assistant every time they need their work to be read to them. The problem of having only two student assistants, who work for four hours per day at the DU, was cited as one of the contributing factors in the delay of information in time to meet their needs or write the assignments.

The other five respondents pointed out that when they were given the assignments they decided to consult their classmates and they brainstormed together about how to address that particular assignment: 'After the brainstorm session, my sighted friends would go to the Online Public Access Catalogue (OPAC) and I would go to the Subject Librarian with at least a picture of what was needed for the assignment' one student added.

Three of the respondents who were blind added that they needed lecture notes because, in class, the notes were given as PowerPoint presentations, followed by

handouts for the same. The three blind students did not receive the notes like the rest of the students. One of the students reported that in lectures, where there was continuous reference to visual aids, such as transparencies, graphs presentations all of which were not effective for him. The other two blind students added that ‘some lecturers forgot that some of us could not see, they kept on saying as you can see this and that, pointing at something, maybe a chart... one felt lost and definitely not benefiting anything’. On the occasion of lecture notes being provided in an inaccessible format, the students felt that they would like the lecturer to be assistive in ensuring that they had access to the notes in advance or at least soon after the lecture.

4.2.2.2 Format of information needed

The student respondents were asked to specify the format of information they needed to meet their needs or solve the problem they had. The majority (six) of the respondents needed information in an electronic format to access and use to write their assignments and three respondents mentioned a need for information in print or Braille formats, in addition to electronic information. That is, six of the students needed electronic information while three needed both electronic and print. The students’ choice of information was greatly influenced by the degree of sightedness. That is, the partially sighted students were comfortable with both electronic information and print formats because with electronic data they could use ZoomText, which increases the font size, and print information could be scanned and converted to a suitable format, such as increasing fonts for easier use. Some of the partially sighted students pointed out that the only limiting factor when accessing electronic information was when the Local Area Networks (LANs) rooms were full and the few computers that had the ZoomText option were used by sighted students. Some of the students’ comments in this regard were:

‘The computers in the LANs that have the ZoomText are not demarcated... so any one can use them... even sighted students who might not need the ZoomText option...’

‘It is most of the time by sheer luck that one would walk into the LAN and find a computer to use... but then time and again there is a need for someone with [an] eyesight problem to rest his/her eyes for a few minutes... by the time one returns... that computer is being used by somebody else’.

The blind students needed electronic information because they could use JAWS and, if desired, a print-out in Braille. One of the respondents said ‘although electronic information supersedes any other format of information for me, if I am looking for an article that is in PDF format... then I am in trouble because JAWS cannot read it’. In a nutshell, most, if not all the formats of information needed by the respondents had some shortcomings, but then they devised strategies of putting up with those shortcomings because as the student stated ‘one had to use what was locally available’.

4.2.3 Respondents’ information seeking behaviour

The interview schedule (Questions 9 to 11) enabled the respondents to explain how they went about meeting their information needs in relation to the instances described above; which sources they consulted and which formats were preferable in trying to get information pertaining to their academic work.

The respondents were asked these questions in order to reveal their information seeking behaviour, that is, how they went about seeking information in response to their critical incident.

4.2.3.1 Actions taken to meet the need and information sources consulted

The respondents were asked to explain how they went about finding the relevant information which they needed for their assignments and for lecture notes which were given as PowerPoint presentations. This question was asked in order to find out the respondents’ information seeking process.

The students with visual impairments represented their information seeking behaviour by tracing their pathways through the various options and routes in Wilson’s 1999 Information Behaviour Model.

Bongi³ an undergraduate partially sighted student reported an occasion when he needed information for his assignment. He made demands from other informal sources of information such as friends, which were a failure. He then started all over again in search of the relevant information by making demands on the formal information systems such as the OPAC to search for relevant sources. The search by Bongi from the formal information systems was then a success (refer to Figure 3). The respondent added that ‘there are times though when the books I have got from the library would not help me...sometimes because I misunderstood the task... then I would have to try and understand the question and start all over again to search for the information sources relevant to my task... at least I had the prescribed text books to start on my assignment’.

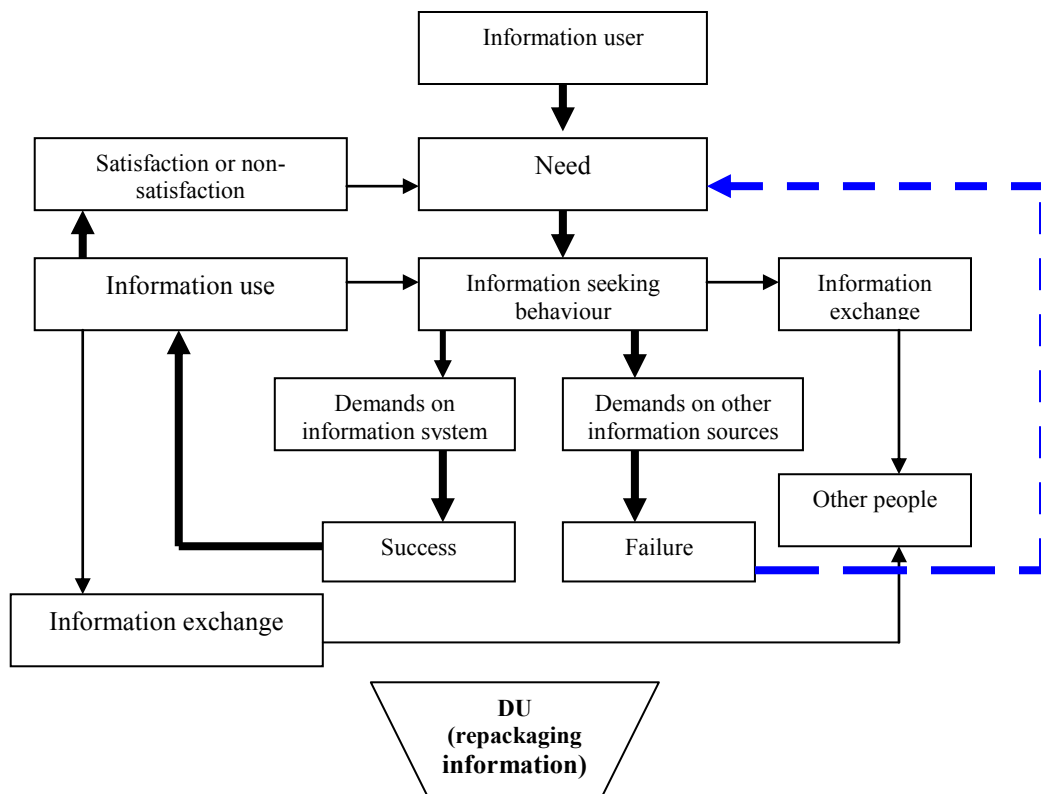


Figure 3. A schematic diagram showing information seeking behaviour pathway exhibited by Bongi, an undergraduate partially sighted student. The thick arrows

³ All the names given to the students are pseudonyms.

indicate the route that was followed by the student during the information seeking process.

Another partially sighted undergraduate student, Lifa, (Figure 4) pointed out that he started from the OPAC in the main library. The search on the OPAC failed because the font size was too small for him to read. He then went to the DU and asked a student assistant to first read the assignment sheet for him and the results on the OPAC. The student did this because he thought he might have missed some words in the assignment sheet, ‘but then it was difficult to ask the person to read to you several times... especially because there were only two student assistants at the DU and a number of students would be queuing for help as well’, the student added. The student then went to the library to get the books they had identified after which he took them to the DU for scanning and emailing to enable the student to access them in a usable format where he could use ZoomText.

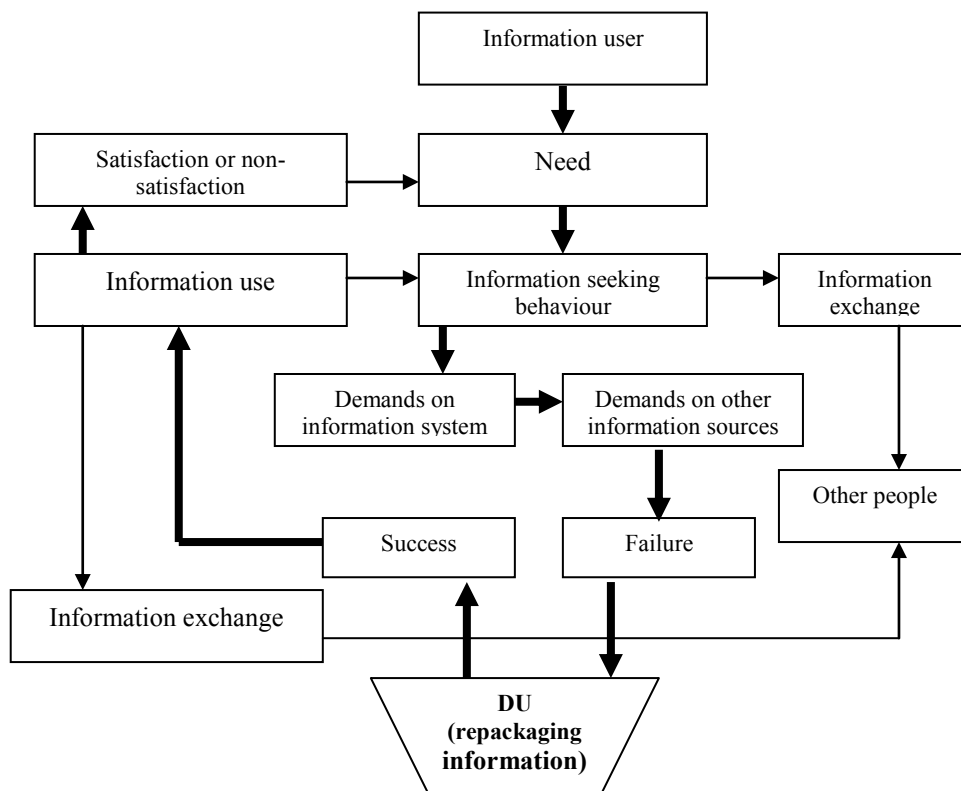


Figure 4. A schematic diagram showing information seeking pathway exhibited by Lifa, an undergraduate partially sighted student. The thick arrows indicate the route that was followed by the student during the information seeking process.

James, an undergraduate partially sighted respondent (Figure 5), said that when he experienced a gap or lack of knowledge, he used the prescribed text books that were kept at the Cecil Renaud (Main) library Academic Reserve section. He was quick to add that ‘although text books were prescribed for us, one had to face the fact that once the one hour loan period for library materials at the academic reserve elapsed before the material was returned... there was a fine.’

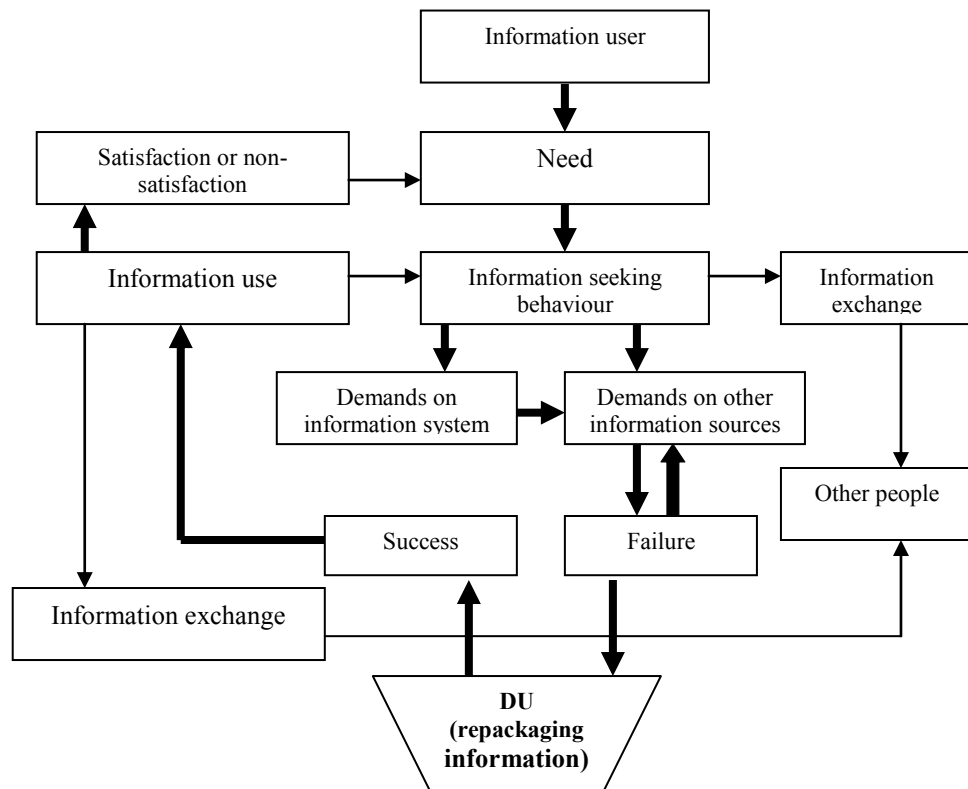


Figure 5. A schematic diagram showing information seeking pathway exhibited by James, an undergraduate partially sighted student. The thick arrows indicate the route that was followed by the student during the information seeking process.

Another student, Musa, an undergraduate partially sighted student (Figure 6), who shared the same experience as James said ‘I had no option but to negotiate with the library staff at the academic reserve section for an extension of time... that is, to use the library material for more than an hour without paying the fine... it was like the librarian was just doing me a favour or most importantly, just being human’.

The two partially sighted students after being frustrated by the one hour loan period decided to revert to their classmates who helped them around the library with using the OPAC and reading to them the search results. The thick return arrows in Figures 5 and 6, respectively, indicate that, when failing to find the required information from the formal library sources the students turned immediately to informal source (such as friends) to try and source information to meet their original need. They then took the information sources they found in the library to the DU for scanning and sending the information to the students in electronic format which enabled them to use ZoomText. The students added that having prescribed text books or information sources did not stop them from using the OPAC, ‘but the OPAC’s main undoing was the absence of the ZoomText option... which makes it difficult for us to use it often.’ In this regard their friends were willing to help them.

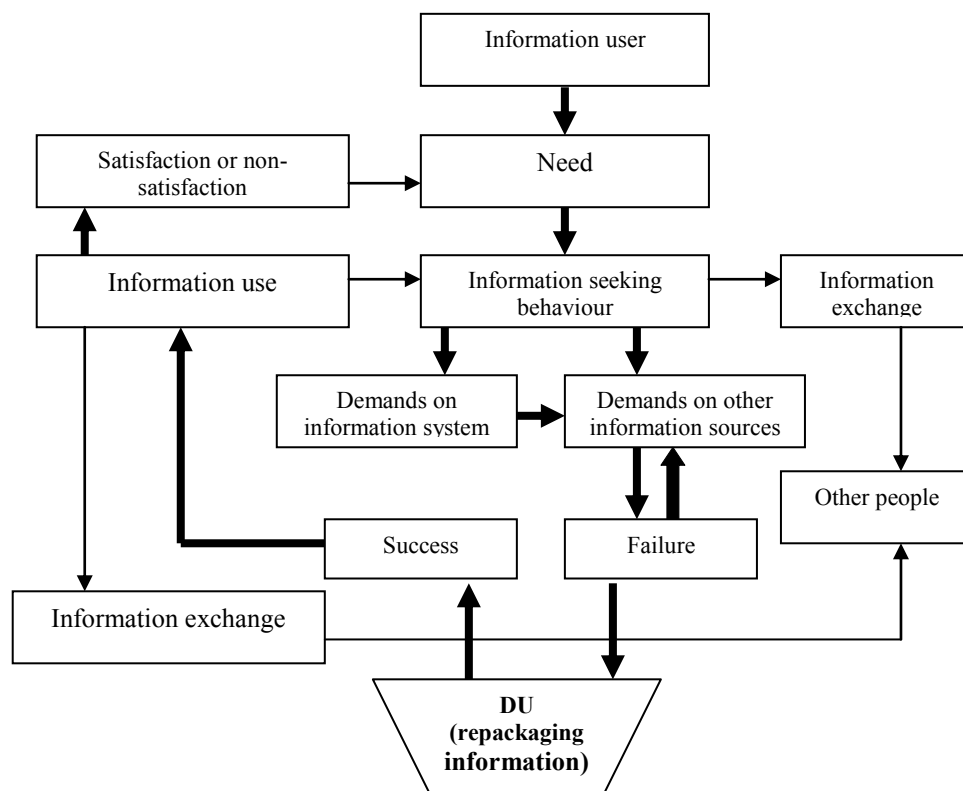


Figure 6. A schematic diagram showing information seeking pathway exhibited by Musa, an undergraduate partially sighted student. The thick arrows indicate the route that was followed by the student during the information seeking process.

Two undergraduate students who described similar patterns of information seeking behaviour, Thando (Figure 7) and Njabu (Figure 8), apart from consulting the OPAC

and using prescribed text books, reported that they would come together with classmates and brain-storm. The brain-storming session according to them ‘provided richness of ideas ... learning from each other... and that apart from making our academic work easier, it created harmony among us’. That is to say, students gained valuable insight by studying and sharing everyday lives alongside peers whose experiences might seem different from their own, whether that peer comes from another culture, or country, or has a disability. Since the students were from different backgrounds and had different experiences (some students functioning with sight impairments while the others were sighted students) they were able to share those experiences. That is, disability is an important aspect of diversity in a university community of students. Inclusion of students with disabilities provides a learning experience for all and reaffirms the dignity of all human beings.

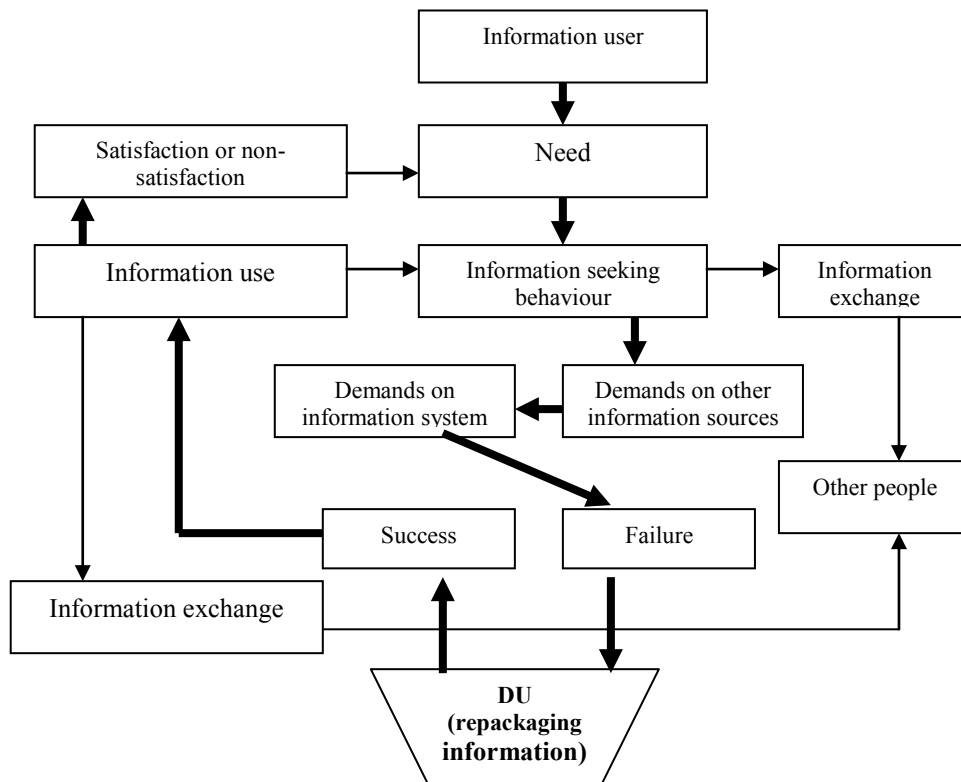


Figure 7. A schematic diagram showing information seeking pathway exhibited by Thando, an undergraduate partially sighted student. The thick arrows indicate the route that was followed by the student during the information seeking process.

After the students’ brainstorming session they went to the library for information sources which were books and databases. The books were then taken to the DU for

repackaging and the databases were accessed at the LAN since the library database computers did not have ZoomText.

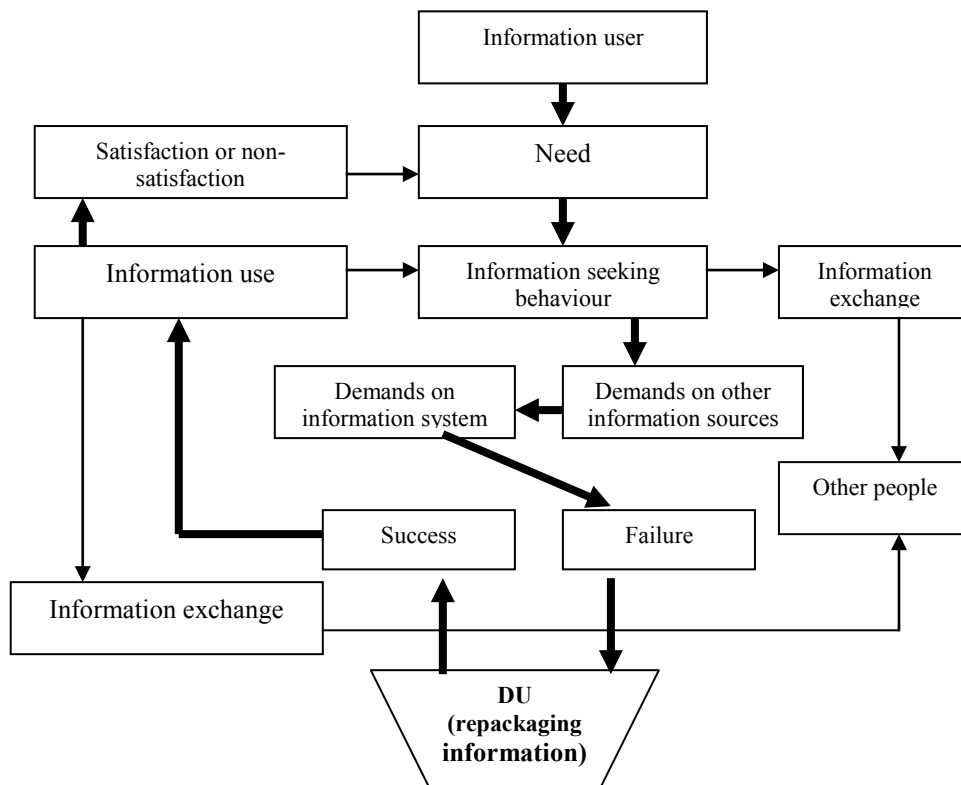


Figure 8. A schematic diagram showing information seeking pathway exhibited by Njabu, an undergraduate partially sighted student. The thick arrows indicate the route that was followed by the student during the information seeking process.

Sazi, who was blind and doing his postgraduate degree, indicated that when he needed information about where to find relevant sources for his assignment, he first tried to understand the task he was given, and then went to the library and consulted the Subject Librarian who helped him identify relevant databases and information sources. ‘You see...’ the student added, ‘that information did not help me much especially because the computer databases at the library did not have JAWS and I was expected to use a mouse... click on links... sighted people go click, click, click and there is the answer... while I am still looking for the link’. The information which the student found did not meet his academic needs, and then the search had to start all over again [broken line] as shown in Figure 9. Thus the student had to re-formulate his search for the same need after which the information sources (print articles) he

found had to be taken to the DU for scanning (repackaging) and emailing the articles in electronic format to the student to access them using JAWS.

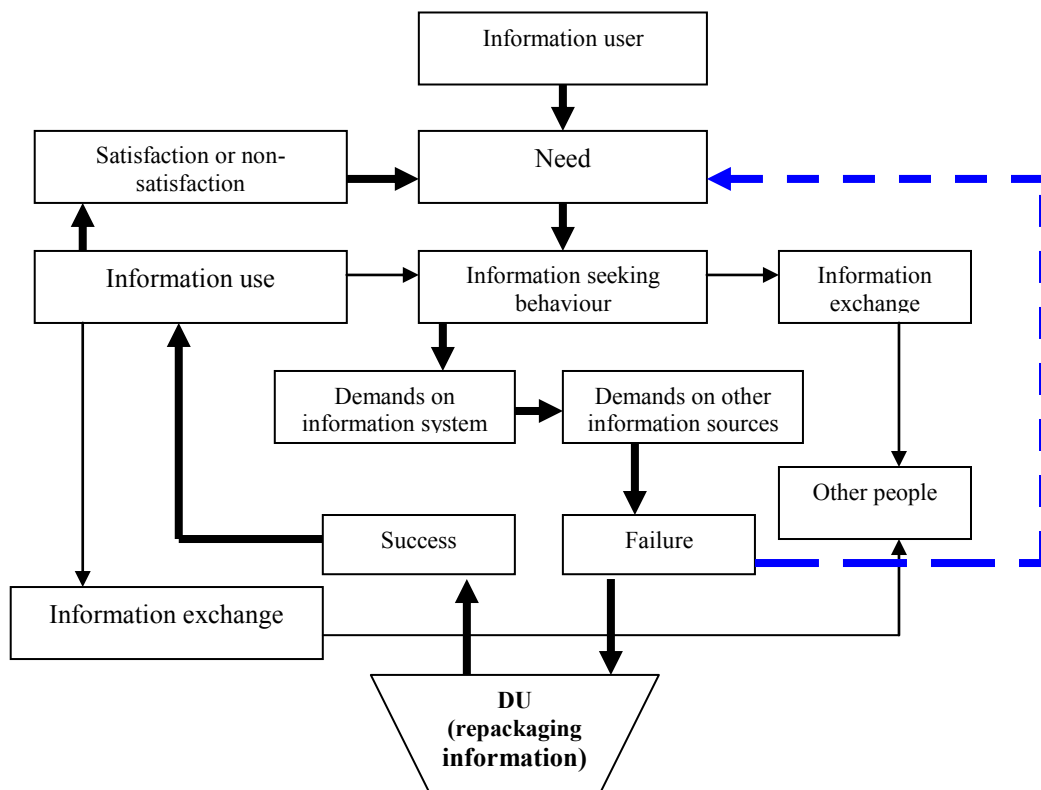


Figure 9. A schematic diagram showing information seeking pathway exhibited by Sazi, a postgraduate blind student. The thick arrows indicate the route that was followed by the student during the information seeking process.

A strategy that was used by Norah (Figure 10), a blind postgraduate student, was to ask a friend to help her get relevant information sources from the library. The friend accompanied her to the Subject Librarian. The Subject Librarian realising that Norah was blind ‘...asked my friend whether he was going to help me or should she go ahead and help me.’ Norah further added that ‘she started to talk to me through my friend, as if I was not there... asking my friend questions, yet I had made it clear that I was the one who needed help... I was treated like thin air’. Norah elaborated that the Subject Librarian would time and again say to my friend ‘ask her if this information could be of help to her or may be she needed to go to the disability centre’. The search process failed at this point as the Subject Librarian talked past Norah. Norah thought she probably needed to call the librarian to order, after which they worked together harmoniously. That is, Norah did not start the search all over again but asked the

Subject Librarian to direct whatever she was saying to her not her friend, hence the arrow returning to the demands on information system. Unfortunately the information she got was in print and also referred to databases which she could not access in the library because the database computers in the library did not have JAWS.

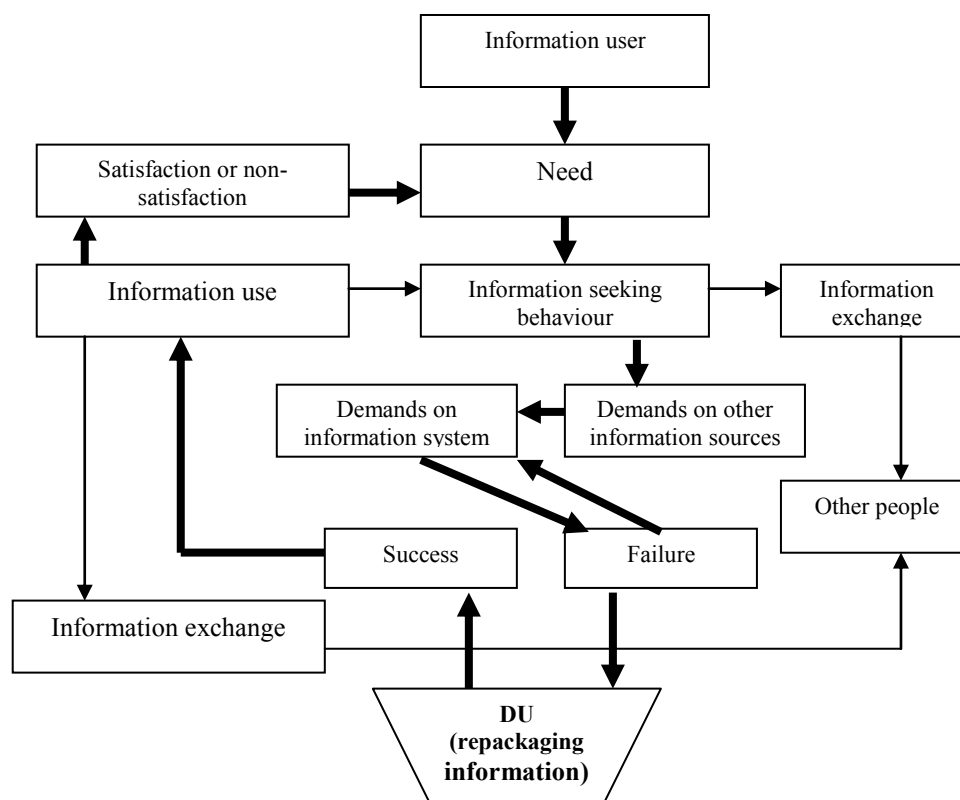


Figure 10. A schematic diagram showing information seeking pathway exhibited by Norah, a postgraduate blind student. The thick arrows indicate the route that was followed by the student during the information seeking process.

Another blind postgraduate student, John, reported that when he needed information for his assignment as shown in Figure 11, went to the LAN to access the OPAC and the WWW (through the use of JAWS) to find material related to his subject. He entered a few key terms and got electronic articles and a few sources that were in the library that he thought might be useful. ‘I then asked a friend to help me get the sources from the library...because none of the classification numbers were written in Braille... so I could not read them without the help of someone... that is depending on other peoples’ goodwill.’ The student added that when they got to the circulation desk, where the books were issued and then given to him without informing him of the due date. ‘I could not believe that the library staff member expected me to read the

due date because I had a white cane in my hand’, the student added. The friend then told John when to return those library books. The student then took the books to the DU for repackaging the information into a usable format.

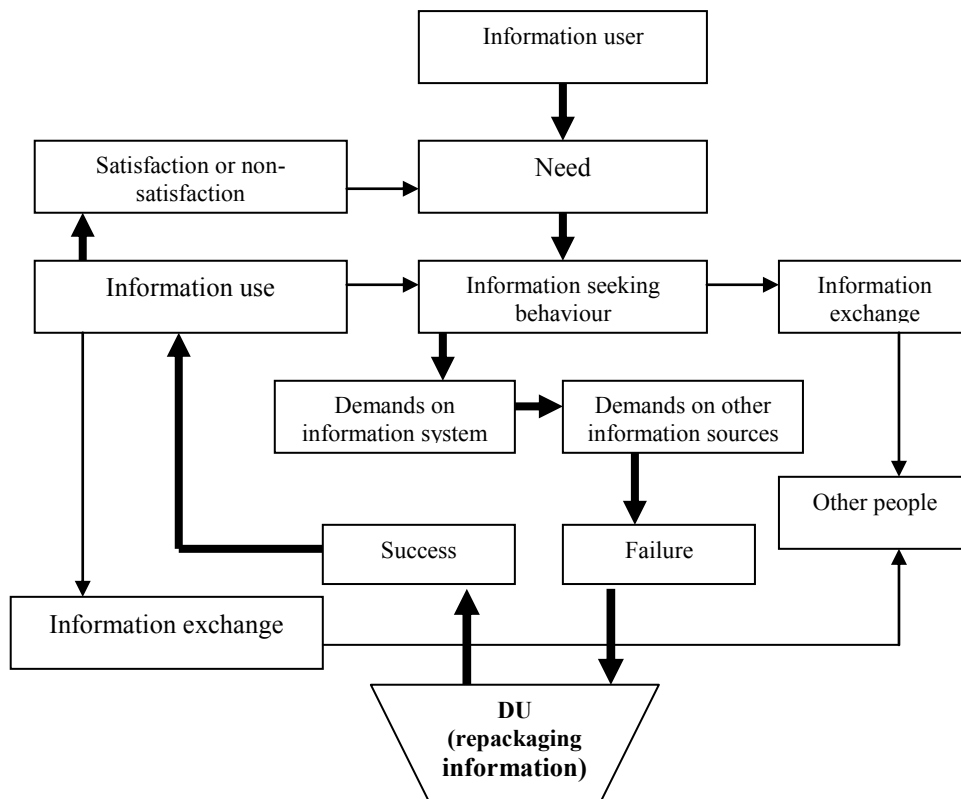


Figure 11. A schematic diagram showing information seeking pathway exhibited by John, a postgraduate blind student. The thick arrows indicate the route that was followed by the student during the information seeking process.

Apart from the individual information processes reported above, the three blind postgraduate students at some point needed lecture notes which were presented in PowerPoint during lectures. They reported that they consulted their lecturers and asked for electronic copies only to get answers such as ‘if at all I remember... and in case I delay, please come to my office.’ The respondents indicated that the ‘see me after lectures to remind me of your notes’ did not help at all because of the busy schedules both the lecturers and the students had’, which would result in the respondents getting their lecture notes later than the rest of the sighted students in the class.

A common information seeking pattern also observed among the three postgraduate students who at some point needed lecture notes in an electronic format. These

students consulted their lecturers and then used the JAWS software to access the lecture notes provided to them [as a word document] electronically.

A line of demarcation was also drawn between information seeking behavior of undergraduate students and postgraduate students as the former, apart from using the OPAC, had prescribed text books to support their tasks while the postgraduate respondents had to get the information about relevant sources of information from Subject Librarians, the OPAC and also both the bibliographic and full text databases or online journals.

Most of the students first used the OPAC to find relevant sources of information then they would either go to the Subject Librarians, the DU or asked for help from friends. That is, six of the respondents consulted the OPAC at some point in their search for information sources and three of them had to use the DU services as well. Two of the postgraduate students started with the Subject Librarians and then consulted, among other sources, the relevant databases.

The results of the study indicated that all the respondents revealed that they acquired the needed information through both informal and formal channels such as using the OPAC, consultation with the Subject Librarians and DU services. All of these were mostly used as opposed to consulting friends.

Figure 12 graphically illustrates the synthesis of Wilson's model and the typical information seeking behaviour that was depicted by the visually impaired students shown by the thick dark arrows. A notable feature in the model is the usefulness of the DU on campus. That is, as much as the library is an information portal for most of the students on campus, with the students with visual impairments it is a different case. Apart from the time the students spent trying to navigate through the barriers in the library before they could find information sources, they had an extra or extended route of going to the DU for assistive technology to access the required information. As mentioned before, the library should therefore adopt a universal design approach in provision of services.

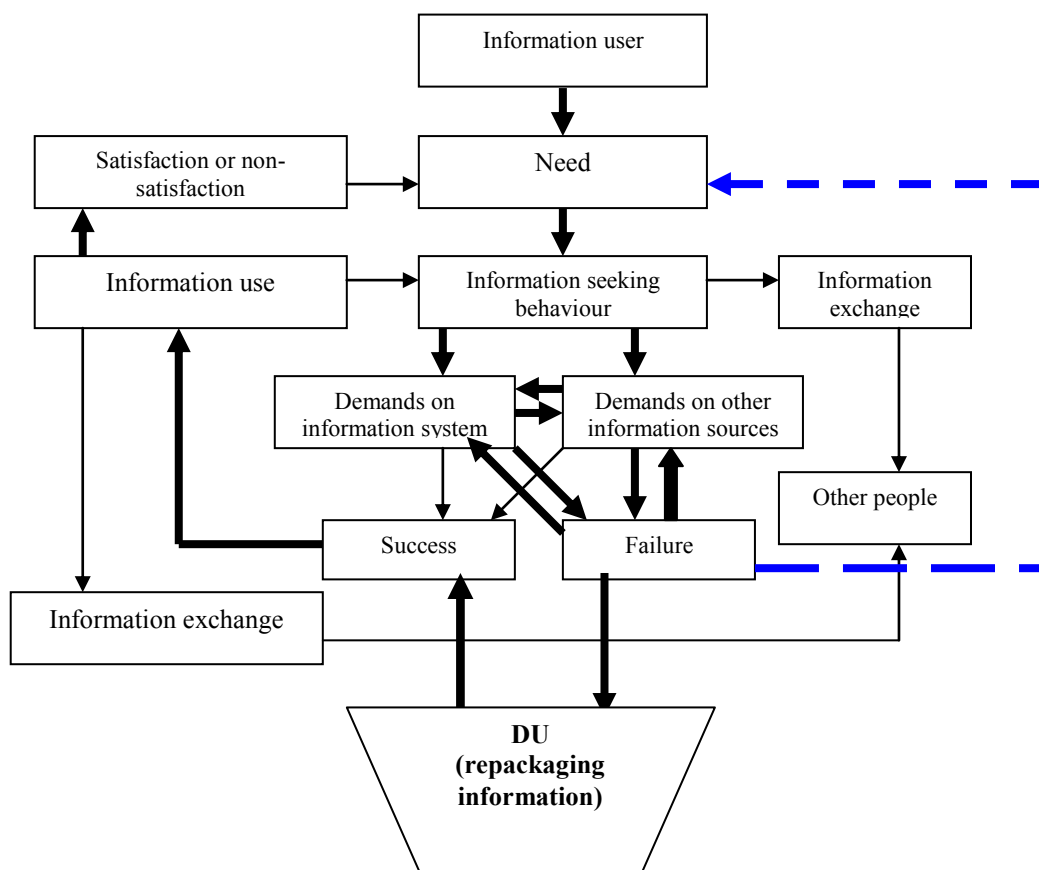


Figure 12. Schematic model showing typical information behaviour depicted by the students with visual impairments in their search for information to meet their academic related needs. The model has been synthesised with Wilson’s 1999 Model of Information Behaviour which provided a framework in mapping the students’ information seeking patterns.

4.2.3.2 Preferred information format and sources

The respondents were requested to specify their preferences regarding information sources and formats. The question was asked to determine what sources of information the students prefer to use on campus. An example would be the case of a Subject Librarian giving advice to a student on search strategies. The Subject Librarian is the source of information and the information format is verbal communication.

The partially sighted students, who constituted six of the respondents, indicated that they preferred electronic information since they could use ZoomText for easy reading. For them, print was not completely ruled out because it could be scanned, edited and

then emailed after which they could use ZoomText in software such as Microsoft Word.

Three of the respondents, who were blind, preferred print, electronic and verbal formats of information. One of the respondents pointed out that the latter was useful in that 'I am able to record... but then it becomes a problem when one does not have a tape recorder because he or she would have to rely on his or her memory all the time'. Blind students preferred an electronic format because they could use JAWS. Print sources could be scanned, edited and then transcribed into Braille. 'But then' one of the students said 'sometimes you go to the LAN to use JAWS, which is the only program now available on campus for students who are blind, only to get a 'programme under construction' message on the screen'.

Having identified the sources the respondents prefer to consult during their information seeking behaviour, the next step is to establish whether the information acquired meets their needs or not.

4.2.4. Information use

The respondents were asked to explain how they used the information they had obtained. The question was asked in order to ascertain whether the information acquired satisfied the students' academic information need or contributed to successful completion of their task or not.

The value of information cannot be over-emphasised because everyone needs information. For the visually impaired students, the mere fact that information exists is not enough, they must be able not only to access but use the information. For example, being a student requires the performance of multiple tasks, besides those of reading and writing, all of which need information. Access to, and utilisation of information forms an integral part of the daily activities of visually impaired students.

The results of the study indicated that there are major differences among students in the use of information which largely depends on the format and source of information consulted. For example, most of the students who consulted electronic information

sources had difficulty using that information because ‘there was too much information overload on the Internet... one has to go through loads of unnecessary information... which is a very strenuous process, time consuming and overbearing and could discourage the user from proceeding.’ In such instances the respondents indicated that they ended up being unable to use that information. One of the respondents added ‘maybe someone has to orient us on how to apply search strategies, especially in the library databases as is the norm with sighted library users.’

All the respondents found the information obtained useful but two of them reported, ‘sometimes the information is not useful... especially if the interface is not suitable for me... like electronic information with a lot of graphics as hyperlinks’. The respondents indicated that when the interface is not suitable they tried other information sources or formats, or to have the information repackaged in a usable format before they could use it. In emphasising the problem with accessing and using learning material, some students alluded to the fact that they had to tape record their lectures, for example, and then transcribe them either into Braille or electronic format and by the time this is done, it would be too late to study those lecture notes and use them either for tests or examinations: ‘let alone to be able to read the notes and participate in the class discussions which would also benefit the other class members’. One student who was blind lamented that because of the delay in getting lecture notes in a usable format, he had to rely on make-up tests most of the time.

An information seeking situation for which the information provided is of no use is regarded as representing an unmet information need, and thus the search has to start all over again.

4.2.5 Services provided by the DU

Questions 14 to 17 on the interview schedule facilitated discussion on the services offered by the DU, that is, whether respondents were aware of the DU services, how they got to know about such services and to pinpoint which services were considered useful or not useful to them.

4.2.5.1 Awareness of services provided by the DU

The respondents were asked if they were aware of services provided by the DU. Five of the respondents indicated that they came from special schools such as the Arthur Blaxall School for the Blind and the Deaf in Pietermaritzburg. At such schools, during open days or career days people from different institutions would be invited to tell the students what their institutions offered. Thus they got to know about the services which are offered by the DU from the UKZN-PMB. One respondent said she was motivated by another blind student to come to UKZN – PMB campus and the same student introduced her to the DUC where she was told more about the services that are offered to students with disabilities.

Another student got to know about such services when he was already on campus from posters, notice board and flyers around campus, then he went to the DU and started using the services. The student added, ‘you know... there is a section in the UKZN application forms which requests the applicant to indicate whether he or she has a disability or not and to further specify the disability... I skipped that part because I did not know whether there was a catch there or not... one would not know whether he or she might be rejected because of that particular disability... one has to be careful of fine prints’ [sic]. Two respondents were at UKZN-PMB before the DU became active, and they felt that the DU was no use to them ‘because it was just an empty office... there was no one there until April 2003 when a DUC was employed’ [on part-time basis, half-day post] then they started using the services. At that time, services that were provided by the DU were only accessible in the morning while the DUC was still in office until the beginning of 2007 when the DUC was employed full-time.

4.2.5.2 Usefulness of services provided by the DU

The respondents were asked to point out the most useful services which were provided by the DU. All the student respondents found that the usefulness of services largely depended on the need one had at a given time, which was further influenced by the degree of sightedness and the usability of the format of the sought information.

Services reported to be useful to all the students at the DU were advice on student funding, liaising with lecturers for an extension of time on assignments, scanning, ZoomText, and liaising with lecturers for a time extension during tests and examinations. In addition, three of the respondents needed oral or electronic exams because they were blind. The blind students elaborated that ‘any information for them in print is not useful... so our examinations should be in a format that would be suitable for us and in an enabling environment.’ However an alternative venue had to be provided for such oral exams to minimise disruption to blind and sighted students.

4.2.5.3 Least useful services

The student respondents were asked to identify services that were provided by the DU that were not useful to them for various reasons. The response to this question did not differ much from the preceding one. Six of the respondents thought services that were not useful depended largely on the need which existed at that particular time and whether or not the particular service was available when the need arose.

A student gave the example of the use of JAWS and said that there were times when he would try to use the programme but found that the programme could not be used because either the computers with the program were out of order or the program was not accessible. The unavailability of the JAWS program at the DU and LANs was cited by the blind students as very limiting in terms of preparing for tests and assignments. Some of the statements to this effect were:

“Just imagine that UKZN-PMB has a number of LANs... but only the New Arts and Commerce LANs have JAWS... I wonder why!”

“The institution has a post graduate LAN which operates for 24 hours... but none of the computers there have the JAWS programme... what does that tell you... does it mean that there are no postgraduate students who are blind?”

“After 4.30 p.m. the New Arts LAN is closed... if you fail to access JAWS at the Commerce LAN... you are doomed for the day... because nowhere else can one get the JAWS programme on campus”.

The researcher was reliably told by the ITD that the UKZN-PMB main campus has three LANs with nine different computer laboratories. For example, the Science LAN, which operates for 24 hours, has one post-graduate laboratory and three undergraduate laboratories and none of the four laboratories has JAWS. The New Arts LAN has four undergraduate laboratories which operate from 8.00 am to 4.30 pm and has only one computer with the JAWS program. The Commerce LAN operates for 24 hours and has only one computer with JAWS. All the laboratories mentioned above have an array of computers which students other than those with visual impairments use.

In a nutshell, the students' concern was that there were only a limited number of computers which had JAWS in the UKZN-PMB campus which hindered progress in their learning endeavours.

4.2.6 Barriers to the use of services

The respondents were asked to identify the barriers experienced when they tried to seek information. This enabled the students to point out the hindrances or barriers in their information seeking processes. The students pointed out a number of obstacles to the use of services provided by UKZN-PMB such as the library, DU, ITD, and during lecture times, which hindered their academic endeavours.

The most commonly encountered barrier was lack of cooperation from staff members who were not willing to go a step further than was needed for sighted students in meeting their specific and general needs. This was the view of seven of the nine respondents. For example, if students have a problem in the LANs the technicians would tell them to go to the DU. The respondents highlighted the perception that they would get the same response when they seek for help from Risk Management Services (RMS), in the library or when they ask lecturers to email them notes that were handed out in class. These actions, in the respondents' words, made them feel like they "belong to the DU". As service providers, the staff play an important role as the interface between the visually impaired students and the service. Yet negative staff

attitudes and ignorance were reported as specific barriers to the use of UKZN services.

Another barrier that the respondents indicated was access to information sources and information. The students mentioned that ‘if a partially sighted student needed to consult an information source such as a book from the library, she or he would need help to get the book off the shelf and then use it but for the blind students with the same need the book had to be scanned, edited then emailed to the student to access it through JAWS’. When addressing the problem of accessing information, in the respondents’ words ‘accessing information in this university... especially for us... is a nightmare.’ One of the respondents added that ‘everywhere where information is involved, there is a barrier’. A consequence to this was ‘not being able to read the information item immediately... which had a very serious limiting factor (delayed submissions of assignments) in their learning activities.’

Of the respondents, two indicated that the library OPAC was a barrier because of the graphic user interface which is the only way provided to navigate through the iLink⁴ OPAC, also that the library databases do not have the ZoomText and are therefore difficult to access.

4.2.7 Improvement on services

Respondents were asked how services for the visually impaired students could be improved at the UKZN-PMB, which also provided them with an opportunity to recommend services to address their particular needs. All the students recommended that all University notices should be posted on GroupWise, which is the email package provided by UKZN. Emails must be posted on GroupWise in text readable by JAWS because the programme cannot read files in PDF format. Three of the student respondents added that the trend has been that some of the notices are posted on GroupWise while some are posted around the campus notice boards thus not taking

⁴ i-Link OPAC is the library catalogue that provides information on publications and resources in all UKZN libraries and also the Cataloguing Network in Pietermaritzburg (CATNIP) libraries. CATNIP is a library group in the Pietermaritzburg area which is building up a joint catalogue hosted by UKZN-PMB

cognisance of the fact that there are those who have difficulty reading information in print format.

For one student, not being able to access the information on campus notice boards resulted in at least one disconcerting experience, as noted:

‘you see blind people make landmarks as they walk around... even here at campus I know the routes I use... like when to jump a ditch and climb the steps... it is so disturbing to find that there is an occasion on the route I use everyday... I feel so foolish when I am stopped on the way and told ... ‘sorry you cannot use this route today... there is an occasion... try another one’.

The student further stated that then he would be left on his own to try and map another way to wherever he was going to, without embarrassing himself, and ‘not that the people who are having that particular occasion did not want to help me... but they did not know how’.

Additionally, eight respondents suggested that the institution should not only conscientise its staff members but should go a step further by making it mandatory for staff to acquaint themselves and know how to provide services to students with different disabilities.

4.2.8 Additional comments

The respondents were asked to give additional information which had to do with visually impaired students and service provision at the UKZN-PMB, other than that which was covered by the semi-structured interview.

Regarding recreational services, two of the respondents thought that the institution does not take into account that students with visual impairments need such services; hence there is nothing provided for them in terms of recreational facilities. Thus they recommend that something needs to be done in terms of getting equipment, for tennis for example, that could be used by visually impaired students and an enabling environment for them to play tennis and also, ‘to have someone at the sports office with the right expertise to train us’.

All the respondents were concerned that as from May 2007 the DU only employed staff members on short-term contracts, thus providing no continuity as the incumbent officer may be deprived of the chance of implementing new programmes before their contract ends. 'Like now', one student added, 'there is an interim DU working with two student assistants'. Some times the DU is left with inexperienced interns, that is, with no qualified staff member to assist the students. Five of the respondents added that visually impaired students have ideas but 'they do not have someone to share and implement those ideas with' because of the afore-mentioned problem.

Six of the respondents wondered if the institution has any policy regarding services that are rendered to students with disabilities, specifically to those with visual impairments. The students' responses about the policy issue led the researcher to the conclusion that most of the students are not aware of the Policy on Students and Staff with Disabilities with a further compounding factor being that the policy is only available in PDF format in the university website which is not compatible with JAWS.

4.3 Results from the survey by questionnaire of the Subject

Librarians

The results from the survey by questionnaire of both the Subject Librarians and the DUC are presented according to the order of the questions in the survey. Questionnaires were given to all the seven Subject Librarians at the Cecil Renaud library. Although the questionnaire was not divided into sections, the preliminary questions (one to three) looked at background information of the Subject Librarians, followed by questions (four to twelve) focusing on services provided by the library to visually impaired students and in the latter part of the questionnaire (13-14) respondents were asked to make recommendations (question 13) about services the library offers to visually impaired students and additional comments (question 14) respectively.

4.3.1 General information

This section provided demographic information about the Subject Librarians who were interviewed.

4.3.1.1 Gender and age

All the respondents were females and their age varied from 30 to 60 years, with three in the 30-39 age bracket, two between 40-49 years old and the remaining two were older than 50 but younger than 60 years old.

4.3.1.2 Length of service

The Subject Librarian respondents were asked to specify the length of time they had spent working in the UKZN-PMB Cecil Renaud Library in order to determine whether the length of time the librarians had spent working for the institution had influenced their knowledge of best practices in assisting students with visual impairments.

One Subject Librarian had worked for less than a year at the main library, two had worked for a year to five years, another two had worked for six to ten years, one had worked 11-20 years and the remaining one had worked for more than 20 but less than 30 years. The figures in Table 3 revealed that only three of the Subject Librarians had little experience working in the UKZN-PMB library since they had worked for less than a year to five years. Four Subject Librarians had gained a lot of experience through working at UKZN-PMB as judged from their length of service which falls between 6 -10 and 21-30 year categories respectively.

4.3.2 Frequency of assisting visually impaired students

The respondents were asked to state how often they assisted students with visual impairments in order to ascertain their experience in working with students with visual impairments (Table 3).

A minority (two) of the Subject Librarians had never assisted students with visual impairments, five indicated they had occasionally helped students with visual impairments. Reasons given for not helping such students were either that the Subject Librarian was new on the job or none of the students taking the subjects assigned to her had a visual impairment.

Table 3. Length of service and frequency of assisting students with visual impairments cross tabulation

Length of service	Frequency of assisting students with visual impairments		Total
	sometimes	not at all	
less than a year	0	1	1
1 - 5yrs	1	1	2
6 - 10yrs	2	0	2
11 - 20yrs	1	0	1
21 - 30yrs	1	0	1
Total	5	2	7

Those Subject Librarians who had been working in the library for a long period had at some point in time rendered services to students with visual impairments, unlike the Subject Librarian who has been working in the library for less than a year and has never assisted visually impaired students.

4.3.3 Preferred sources of information by students with visual impairments

The Subject Librarians were asked to specify the sources of information made available in the library that students with visual impairments used the most. The question was asked in order to find the Subject Librarians' views on the preferred sources of information of the students with visual impairments as shown in Table 4 below.

Of the five Subject Librarians who sometimes assisted students with visual impairments, two of them noted that both print and electronic sources were used by these students. Electronic sources that were usually used by the visually impaired students were library databases and electronic journals, where the students would find full text articles.

Table 4. Frequency of assisting visually impaired students and preferred sources cross tabulation

Frequency of assisting students with visual impairments	Preferred sources			Total
	print	electronic	face-to-face	
sometimes	2	3	0	5
not at all	0	1	1	2
Total	2	4	1	7

One Subject Librarian indicated that visually impaired students preferred electronic sources, especially those students who are partially sighted, and the other noted that the medium used depended on the level of impairment, that is, whether they were totally blind or had a certain degree of sightedness. Subject Librarians who have been working at the library longer had at some point in time assisted visually impaired students, which placed them in a better position to know which sources of information were preferred by the visually impaired students. Notable, is that the Subject Librarian who has never assisted students with visual impairment holds the view that the students would prefer electronic and face-to-face sources of information.

4.3.4 Reasons for preference of sources

The reasons for the preferences shown in the preceding question were further investigated. Three of the Subject Librarians who had experience of helping students with visual impairments indicated that print and electronic formats are the most preferred information sources basically because they are the two which are available

in the library. Two of the respondents observed that electronic sources were the most preferred because ‘...computer technology makes it possible for the font size to be increased, so partially sighted students preferred to use electronic sources.’ This finding tallied with that related by two Subject Librarians who indicated that they had never assisted students with visual impairments thus they assumed that face-to-face would be preferred because the students could record the conversation.

4.3.5 Barriers to accessing services offered by the library

Respondents were asked to point out what they perceived to be hindrances or barriers that would prevent visually impaired students from accessing services from the library.

The question was intended to pinpoint gaps and flaws in the information providers and to find a way of building their capacity to make them better able to respond to expressed needs.

Four of the Subject Librarians indicated that the book labels (Dewey classification numbers) were too small for the partially sighted students to read, hence the following comments:

‘Books are difficult to find... on the high shelves... and with small shelf labels, it is even harder for the students... thus always having to ask for help’.

‘Help is not always readily available for the students... especially getting books off the shelves because of the time factor on our side.’

They further added that the shelves are too high for students to read because most partially sighted students found it easier to read what was at eye level compared to books located high or too low on the shelves. Another factor was that some, if not all, databases, including the OPAC do not have a ZoomText option. One respondent said ‘the students are struggling to access information in the library, as I think the library does not have special services for them... that is, no facilities for the visually impaired students’.

Lack of appropriate software in the library, such as JAWS, was also mentioned as a barrier for visually impaired students especially blind students. 'It is pretty difficult for the blind students because they cannot read print text and the electronic sources of information are not useful to them without JAWS'.

Another respondent said, 'I am a professional, but each time a student with a disability, especially if the disability is visual impairment, seeks assistance I feel intimidated because I do not know how to help the student without offending him or her'. Two of the respondents did not know what could be hindering visually impaired students from accessing services from the library because they had never interacted with such students.

4.3.6 Specialised library services

The respondents were asked to state whether there were specialised services in the library for the visually impaired students. The respondents were further asked that if services existed, what they were and if there were none why was this so.

This question was asked in order to ascertain whether there were any services provided to cater for the particular needs of visually impaired students and whether the Subject Librarians knew about their availability.

All the Subject Librarians including those that had never dealt with students with visual impairments, said there were no specialised services for the visually impaired students. One of the respondents said, 'I think we do not feel the pressure to provide specialised services to visually impaired students, especially because we are looking at the number of visually impaired students ... they are few... and again we tell ourselves... if the students need help... the disability unit coordinates the students' needs.' When the respondents were later probed about why that was the case, two of them noted cost implications saying that there was a lack of financial and human resources. That is to say, the library had no money to provide the specialised services for visually impaired students such as buying a program like JAWS. Other

respondents did not know why there were no specialised services for the visually impaired students.

4.3.7 Initiatives regarding services for visually impaired students

The respondents were asked if there were any initiatives in place regarding information services in the library for students with visual impairments.

Four of the respondents said there were no initiatives and that whenever students with visual impairments came to the library for help, they were referred to the DU for specialised services. Three respondents said they did not know whether there are any initiatives.

4.3.8 Librarians' perceptions on service provision to students with visual impairments

The Subject Librarian respondents were asked to state what they thought about the services that were provided by the library for the visually impaired students in order to find out from them whether they thought the visually impaired students were satisfied with the services that were provided by the library or not.

Four of the Subject Librarians said that they thought the visually impaired students were not satisfied with the services as they rarely use the library. 'Basically, there is nothing offered for them in this library', one of the respondents added. The fact that they perceived that the students were not satisfied could also be attributed to the fact that there were no specialised services for the visually impaired students. Another respondent said, 'I don't think the students are satisfied with the library services because I would imagine that they want specific, defined services, for example, a person who is dedicated or delegated to assist them, better computers and electronic books'. The minority of the respondents (three) did not know whether the students were satisfied or not.

4.3.9 Recommendations on library services for the students with visual impairments

The respondents were then asked to make recommendations on library services for the visually impaired students.

The majority of the respondents' recommended that the library needs to have a workstation that would have specialised computers with programmes and software, such as JAWS and ZoomText, that could be used by the visually impaired students. In addition, they suggested that there should be a Subject Librarian who would be dedicated to work with students with visual impairments. Other respondents suggested that all the librarians should be trained on how to best assist students with visual impairments and that a needs assessment is long overdue. To emphasise the needs assessment exercise, one of the respondents said, 'there is a need to ask the visually impaired students to advise the library on issues of concern'. The rest of the respondents felt that any development and provision of specialised services hinges around financial resources, and that with the present budgetary constraints, it was difficult to provide services to everyone's satisfaction.

4.3.10 Additional comments

Other than issues which were covered by the questionnaire, the respondents were given an opportunity to provide any additional information about the provision of library services to the visually impaired students.

The respondents unanimously stated that time constraints on their part played a major role in the lack of satisfactory provision of information services to the visually impaired students. Five thought that it was not practical to read aloud all the search results for the students with visual impairments, hence the need for one Subject Librarian who would be assigned to work with students with disabilities. One of the respondents was concerned that 'the administrative side of organising material for the blind students... is difficult and I just do not know how to do that.' Some of the respondents highlighted the fact that they are looking forward to a time when they

would be trained on how to best provide services to library users who have disabilities. They fear that when such students come for help they do not have the right expertise to help without unconsciously offending or marginalising them.

4.4 Results from the survey by questionnaire of the Disability Unit Coordinator (DUC).

The researcher was made aware that the DU had an interim DUC, that is, during the time of data collection there were no full-time permanent staff members other than the two student assistants.

4.4.1 Length of service

The DUC had worked for the unit for four months at the time the study was carried out and she was employed on a contractual basis up until August 2008. For that reason data collected from her was supplemented by information gathered from her predecessor at the local campus who then relocated to the DU at Howard College in Durban. The researcher had a personal conversation with the DU at Howard College with regard to the services that were offered by the DU at Pietermaritzburg.

The interim DUC had a Masters in Social Science (MSocSci) and her thesis was entitled ‘Addressing the needs and rights of people with disabilities in Amawoti⁵.’ Apart from her Masters degree, she has worked extensively with people with disabilities. Her experience in disability issues is briefly summarised as follows:

- She was instrumental in setting up the Amawoti Disabled People's Association: a Disabled People's Organisation and Community Based Rehabilitation project based in Inanda, Durban.
- She has set up and worked with the Disability Action Research Team (DART) in a range of action research projects.

⁵ Amawoti is a sub-district of Greater Inanda. Inanda is an informal settlement that lies thirty kilometers north of central Durban (Philpott 1992: 42).

- During 2005-2006, she was a member of the national Research Team of the Sisonke Inclusive Education Project, a consortium appointed by the Dept of Education to support human resource development for inclusive education.
- From 2005-2007 she worked closely with the Disabled Children's Action Group (DICAG), a national organisation of parents of disabled children in advocacy processes to ensure that children with disability are included in the new Children's Act.
- She is currently working on a number of research projects in the disability sector.

It was clear that the DUC had considerable experience and was not new to disability and the barriers students with visual impairments might have when seeking information.

4.4.2 Services provided by the DU for the visually impaired students

The respondent was asked to specify services that were provided by the DU for the students with visual impairments.

The respondent reported that the unit provides a range of general services to students with disabilities, which also benefit those with visual impairments. These included services such as:

- Advice and assistance with, for example, letters of motivation for bursaries, assistance with acquiring doctors' letters and other documentation and financial advice.
- Assistance with applications for assistive devices such as computers, magnifiers and others.
- Liaising with the Examinations Office to request for specific provision of, among others, concessions, extra time for writing assignments and exams, large print, electronic versions of exams papers and software such as JAWS.

'Other than those general services,' the DUC added, 'there were specific services provided for students with visual impairments, depending on whether they were partially sighted or totally blind'. For example, those who had a certain degree of

sightedness were assisted with ZoomText technology and those who were blind made use of JAWS.

4.4.3 Awareness of the DU services and strategies used.

The respondent was asked if the students with visual impairments were aware of the services provided by the DU.

It was difficult for the interim DUC to answer this question as she had only been employed at the DU for four months. However, her predecessor said:

The unit has programmes in place for visits to schools and informing students about what the DU offers. For those who might come to UKZN having not heard about the DU, the office would post notices around campus and distribute flyers to that effect. Once in a year, the unit has a disability awareness day which is not only of benefit to students with disability issues but also to sensitise the university community about disability issues.

4.4.4 Services most used by the students with visual impairments

The respondent was asked to point out services that were used the most by visually impaired students. Basically all the services that were mentioned in Section 4.3.2.2 are used by the students. These services are the most utilised as they are the core functions of the DU and are not provided elsewhere on the UKZN-PMB campus. The services that are provided at the DU relate directly to support for students' academic studies on campus and thus facilitate academic success at UKZN-PMB.

4.4.5 Under-utilised services

Among the services that are provided by the DU, the respondent was asked whether she was aware of services provided by the DU which are under-utilised for particular reasons. It was not easy for the DUC and her predecessor to say which of the services were under-utilised because, according to them, there was no mechanism in place to

monitor the use of specialised services or facilities, for example, JAWS provided in various LANs.

4.4.6 Barriers in the provision of DU services

On trying to identify barriers to the provision of DU services, the response of the past DUC was that the primary barrier was the assumption that the DU is the sole agent responsible for services provided to students with disabilities, whereas all faculties and schools should be taking responsibility to support students with disabilities. Lecturers, for example, should be responsible for assisting students with visual impairments with the academic information needs (by ensuring that their lecture material and handouts are easily accessible to all), and providing guidance as to how the visually impaired students could go about meeting their information needs from existing formal, (for example, the library) or other informal sources. Another example could be that of the technicians at the LANs, who should be responsible for overseeing computer access for all students, including those with disabilities by liaising with the DUC. Another example mentioned, was that the library staff, specifically the Subject Librarians, should be able to help students with disabilities to access library material in a usable format.

4.4.7 Initiatives for service provision

The respondent was asked if there were any current initiatives regarding information services for the visually impaired students at UKZN.

Because the DU was staffed with a short-term contract employee, it was difficult for them to embark on new initiatives specifically for the students with visual impairments. The current DUC's predecessor mentioned that the UKZN has a policy on students and staff with disabilities, 'and the policy has items that the institution intends to do'. It appeared that from the time that policy was endorsed nothing much has been done in terms of services rendered to students with disabilities including those with visual impairments.

4.4.8 Additional comments

The respondent was asked to add any additional information regarding services that are provided for visually impaired students.

The interim DUC indicated that it would be better if disabled students themselves became part of providing support to other students. She further indicated that, ‘one way of accomplishing that could be through the Work Studies programme’. The Work Studies programme is when student assistants (not necessarily those with disabilities) are hired in the DU to help in the day-to-day running of the office including processing the students work. The DUC’s view was that students with disabilities should be part of that programme and assist other students who might have impairments.

4.5 Summary

In this chapter, results of the study were presented according to the research questions. The information seeking behavior of visually impaired students at the UKZN-PMB were identified and depicted schematically using Wilson’s 1999 model of information behaviour. Identification of the information seeking behavior of the students helped in identifying the gaps and barriers by the information providers and to find a way of building their capacity to make them better able to respond to expressed needs. Views of Subject Librarians and the DUC solicited on services, problems and interventions confirmed that there is a need for the institution (UKZN-PMB) to re-think its information service provision relating to visually impaired students.

Chapter 5: Discussion

5.0 Introduction

Chapter Five provides interpretation of the results presented in Chapter Four and a discussion in the light of other studies. According to Kothari (2004: 344) it is through the interpretation of data that the researcher can expose the relations and processes that underlie the findings. Most of the studies referred to in this study were conducted internationally because there have been few studies specific to visually impaired students at tertiary level in South Africa. The international researchers raised issues which were applicable to the South African context. The results of the findings are discussed according to the research questions and the information model used for this study.

The discussion in this chapter integrates the results for each of the research questions into an overall consideration of the dynamics of information seeking behaviour exhibited by the students and what such behaviour reveals about the ability of the information services provided by the UKZN to meet their academic information needs. The information behaviour model that was referred to in Chapter 2 will be used as a framework for discussing the students' information seeking patterns. The discussion brings all the three categories of respondents (visually impaired students, Subject Librarians and the DUC) together to answer the research questions, by considering what the units of analysis shared in common and, as well, where there was no common ground.

5.1 Summary of the background information on the three units of analysis

This section starts by giving a brief overview of the background information of the three categories of respondents. The background information will give a clear picture of who the student respondents who were interviewed in this study were, of the Subject Librarian respondents together with the DU who responded to the survey by the questionnaire used in this study.

The student respondents were diverse in their age as reflected in Sections 4.2 and there were more undergraduate than postgraduate students, which suggest that there were more undergraduate students with visual impairments on campus than postgraduates.

The Subject Librarians were diverse in their demographic characteristics (Section 4.3.1.1) and their work experience varied. The Subject Librarians, who had worked in the UKZN-PMB library for more than 10 years could be seen as being in a better position to know the needs of the diverse community they served.

The background information about the DUC as reflected in Section 4.4 indicated that she had vast experience in disability issues and achievements which enabled her to render services at the DU in a commendable manner.

5.2 Responses to the research questions

Results from the semi-structured interviews with the visually impaired students, survey questionnaires for the Subject Librarians and the DUC confirmed that the information providers at UKZN-PMB were aware of the diverse composition of the institution's student community, among which are students with visual impairments. However, despite the awareness, the study identified a number of indicators that point to challenges faced by the visually impaired students in accessing information services that are provided by the UKZN-PMB. The indicators are discussed in light of the dynamics of information seeking behaviour demonstrated by the visually impaired students with regard to the information behaviour model adapted from Wilson (1999).

5.3 Information seeking behaviour

Information behaviour is by its very nature a complex matter. Thus, in order to understand the visually impaired students' information behaviour, salient concepts related to the subject such as the students' information needs, their information seeking behaviour and use of information will be discussed and then drawn together to describe typical patterns of information exhibited by the respondents.

5.3.1 Respondents' information needs

This section explores the findings relating to the respondents' information needs, showing the format of information they seek and the various factors that influenced their information behaviour.

5.3.1.1 Information seeking situations

A practical way of discovering users' needs is by having the respondents relate in their own words the problems and difficulties they personally encountered in their daily activities. However, Belkin *et al.* (1982) stated some situations which, even if well understood at the cognitive level, defy description at the linguistic level. For this reason the critical incident technique as highlighted in Section 4.2.2.1, was used to facilitate the description of the respondents' information seeking situations when the respondents needed information to solve a problem or make decisions. The critical incident technique enabled the researcher to probe the respondents' responses further until she was able to understand the nature of their information need.

The sole reason for using the critical incident approach was the recognition that most people have difficulty identifying and articulating their information needs. Dervin and Nilan (1986), Kaniki (1995), Wilson (1999) and Maepa (2000), among others, also alluded to the fact that it is difficult for one to articulate his/her information needs. For instance, one of the respondents when asked to describe a recent instance of an information need, informed the researcher that lecturers give students a lot of work and expect them to finish within a short space of time. It was not until further probing that the researcher was able to unpack and identify the specific information need that the student had, which was basically to get relevant sources for his assignments.

A drawback that was presented in using the critical incident technique was the fact that it relied heavily on the respondents' memory, that is, the participants had to remember those particular incidents. Bystrom and Järvelin (1995) suggested that subjects could use a diary where they could freely describe relevant aspects of their incidents because remembering could be difficult but having something written down

will enable them to refer back. However, Kaniki (2001: 195) argues that people will often remember what they consider to be critical to them.

The study revealed that assistance in finding relevant sources of information for academic work constituted the student respondents' key needs. The respondents were given assignments by their lecturers and therefore needed to know what sources to consult and where to get relevant sources for those particular tasks. Apart from the assignment related need, three of the respondents added that they needed lecture notes presented in class in a format that was suitable for them to access, understand or use for tests and for study reference. The students said that notes presented in class were often in the form of PowerPoint presentations and therefore contained visual aids which were, unfortunately, not verbalised. A simpler way of accommodating visually impaired students in lectures where visual aids will be used is by emailing the student the notes in Microsoft Word format prior to the lecture. As this software is compatible with JAWS the student can go through them and later be able to follow during the lecture. Moodley (2008) advised lecturers not to think of a disability category first and then consider a solution or intervention; rather the focus should be on whether the material would accommodate needs of all learners.

The respondents' first priority need tallied with similar cases in the literature (Brockemeier 1992, Etheridge and Mason 1994, Davis 2000, Shunmugan 2002 and Davies 2007) which suggested that, although students' needs are varied and broad, academic needs are of paramount importance because that is the reason why they are at the university. Other international studies of visually impaired students have produced similar results. In her review of British studies of the information needs of visually impaired students, Todd (1984) found that academic needs headed the list of respondents' most worrying problems. Brockmeier (1992: 14) also found that information related to academic needs of visually impaired college students were the most frequently mentioned concerns.

Apart from the academic information needs related to lectures and assignments that were common to all the respondents, other formats of information were mentioned. Some of the respondents needed to know about required combinations for degree of modules so that they would not find themselves having accidentally deviated from

their career paths. Having identified the combinations of modules, the students needed to know about the time schedule for the different degrees. The students said that they had to know the timetable so that they could identify clashes between the modules they have selected, after which they would be able to discuss such clashes with their lecturers.

Information about recreational services provided by UKZN-PMB also featured among the students' needs. The students needed to know where the sports office was located and to find out if there are any recreational facilities that could accommodate them. One partially sighted student said that before she came to UKZN-PMB she used to play tennis using facilities which were designed in such a way that her needs were accommodated and her instructor was trained on how to instruct students who had visual impairment. The challenge that the student had when she got to the sports office was that there were no specialised services and equipment at UKZN-PMB, where the sports facilities catered only for sighted students.

5.3.1.2 Information sources and formats used

The extent of use of information sources and formats used are other components of information-seeking behaviour. Thus, after identifying the respondents' information needs, the next step was to find out which information sources were consulted and the information formats preferred by the students.

Some of the information sources used by the respondents turned out to be information channels as well. For instance, in the case where a Subject Librarian gives advice to the students on which information sources could be relevant to the students' assignments, she (the librarian) serves both as information source and a channel.

Information needs can be met by consulting either formal or informal sources of information. Formal sources of information that the students used were published works held in the library, such as books and journals. Electronic sources that were used were the WWW, bibliographic and full-text databases and articles. Informal information sources included, but not limited to, conversation among the students,

friends (interpersonal) and any unpublished works such as theses and reports (grey literature) some of which were available in the library.

The study revealed that the respondents' preferences for particular sources of information were closely linked to the information format preferred because of ease of access. The factors influencing the choice of information sources and formats preferred by the students were largely determined by a number of factors. Most importantly, were the degree of their impairment, the nature of their task at hand and their level of study, hence the discussion in this section will be structured around the students' level of study and their degree of visual impairment. However, in the case of UKZN-PMB, although the students had preferences for information sources and formats, they had to use and choose sources and formats that were available for their academic tasks. For example, even though a blind student might prefer to write the examination in Braille, the available formats for examinations in the institution are print, oral and electronic (through the use of JAWS), so their preferences were limited to what was available in the institution.

5.3.1.2.1 Preferred information sources and formats of the undergraduate partially sighted students

The six partially sighted undergraduate students preferred electronic and print sources of information. They said that electronic information was suitable for them because they could enlarge the font size, making it easier to read. The lack of ZoomText in the Online Public Access Catalogue (OPAC) posed a challenge for the partially sighted students. The library OPAC enables users to locate books and periodicals not only in the UKZN Libraries but also in libraries around PMB including the Legal Deposit Collection at the Bessie Head Library in the city centre. These libraries belong to a consortium, which facilitates resource sharing through inter-library loan arrangements.

The students said that each time they want to use the OPAC they would have to be in the company of their friends or class mates which hindered their independence. The students mentioned that they did not want to be seen as over-dependent on other

people; hence the urgent need to have a library catalogue that they could access. Partially sighted people, as Davies (2007) observed, would prefer electronic information over print because the latter slows their reading down and often makes them dependent on other people while the former has an option of enlarging the font size. The dependence of the partially sighted students on other (sighted) students can largely be attributed to the absence of a suitable interface in the library's electronic resources, which are supposed to be accessible to all library users.

Print sources of information were also of use to the partially sighted students as they could take library books home, for example, and read them at their own pace. Apart from the fact that the students could read the books at their own pace, they were able to photocopy and enlarge the print of the sections they were interested in. Kailes and Mac Donald (2006) pointed out that many people with visual disabilities have some sight and can read large print material which may be produced using a photocopier or a computer by scanning and enlarging.

The partially sighted undergraduate students had prescribed books placed on Academic Reserve by their lecturers so that they could be used for short periods by many students for their academic tasks. The students said that having the prescribed information sources and some placed on reserve minimised the frustration that they would go through when they tried to get books from the library shelves, which have book labels that are printed in a small font. As much as the prescribed sources were a boon to the undergraduate students, they were still faced with the problem of having a short loan period. The students indicated that the one hour loan period had negative effects on them as they could not read as fast as some sighted friends. At times the students needed to take the books to the DU for scanning so that they could access the information they needed electronically.

The state of affairs at the UKZN-PMB library at the Academic Reserves section has far-reaching implications for the students with visual impairments. Initially this library material was loaned out to students for as long as they needed it and to be used within the library. Additionally the students had the option of booking the item over night if required. With the new library electronic system the books are loaned and

renewed every hour with an option of an overnight loan thereby increasing the circulation of this high demand material.

The disadvantage of the changes that were made at the Academic Reserves with the advent of the new electronic system was that they did not accommodate students with visual impairments whose information needs are not readily met. The visually impaired students, when describing the steps and procedures they had to embark on before using the library material, said they first had to borrow the book, either photocopy or take it to the DU to be scanned, formatted and then have the electronic copy emailed to them so that they could obtain the information in a usable format. The challenges that the students face point to the need for the library personnel to assess the level and nature of visually impaired students' needs. Students' information needs differ, as mentioned earlier. For example, what is required for two students both diagnosed as partially sighted will be very different, where one has no central vision and the other no peripheral vision. Large print will assist the former but not the latter.

Having assessed the students' needs, principles of universal design that were mentioned in Section 2.2.5.2 would be appropriate. Universal design, according to Abell, Bauder and Simmons (2004), blends educational technology with accessible instructional resources that allow students to control and customise the learning environment to meet their own unique learning style. Universal design principles facilitate inclusive features to information resources and should underpin the design of information systems. The information systems should be flexible enough to be used in the ways preferred by different users and provide them with output in the format required. For example, if students want to print or email information in Braille or large print, the appropriate software should be in place.

Judging from the students' choices and preferences regarding information sources and formats, there is a clear indication that their preferences tended more towards electronic sources and format of information, although they said they could also use print information sources with assistive technology.

5.3.1.2.2 Preferred information sources and formats of the postgraduate blind students

The blind postgraduate students preferred electronic and interpersonal sources of information which would yield oral information. Oral information, according to the students, enabled them to record then convert the information to Braille. However, the AFB (2008) lamented that there is a significant shortage of Braille transcribers and the significant shortage impacts heavily on the blind students because they go weeks and sometimes months without textbooks that their sighted peers have for their academic work. The shortage of Braille transcribers is also a challenge at UKZN-PMB. The problem with recording conversations or lectures, as the students indicated, was that recording should be done in a room where there is no background noise. There were few times when the students were able to record without such disturbances either in the library or lecture rooms, because most of the time there would be people talking at the background. When the students failed to record the information, they would then request electronic copies to be made available and then relied on their mental capabilities for explanations that might not be in the electronic copy. The students said that when there is a lot of information that is verbalised, it became a problem because they could not remember everything that was said. The problem of relying on oral transcriptions forced them to seek alternative means, such as consulting electronic sources, provided the required information was in a format compatible with JAWS, such as a Microsoft Word document.

Electronic sources of information were preferred by the blind postgraduate students because access was easy through the use of JAWS. The blind respondents, by virtue of being postgraduate students, meant that their academic needs were largely determined by the necessity to conduct extensive research and consult a wide array of sources whereas undergraduate students generally used a set of prescribed information sources. According to Cone and Foster (1998: 57) reading widely assists postgraduate students to scan the literature and to discover what other scholars have written on their specific fields.

The library website was a portal for most of the electronic sources of information used by the visually impaired students, particularly the blind postgraduate students. That is, through the library website, bibliographic and full-text databases were made available remotely via the library computers. One blind postgraduate student who was doing her Masters degree in Psychology mentioned that her Subject Librarian advised her to use PsycInfo, which is a subject database that was relevant to her task. Some of the databases that the UKZN library subscribes to are aggregated and multi-disciplinary, such as EsbcoHost. The challenge that was faced by the students in using the electronic information was the fact that the library computers do not have a JAWS programme thus the students had to be in the LAN each time they needed information from the databases. Furthermore, some of the articles that were available on-line, were in PDF format which made them impossible to access for the blind students as this format is not compatible with the JAWS program. The students who wanted to access the databases remotely had a problem with logging on. Unfortunately, the students did not know that they should ask for the password from the Subject Librarians. The lack of a password forced the students to always access the databases when they were on campus.

Along with students' preferences for electronic information sources, the results of the study revealed that the WWW was extensively used by the visually impaired students. The WWW is one of the internet services that is now said to be the most consulted source of information, especially by postgraduate students. Another electronic source that the students could use was Google scholar which offers various options on electronic formats which are compatible with JAWS. In line with the results of the study on the use of the WWW as an information source, Davies (2007) pointed out that the WWW has enabled visually impaired students to access electronic information resources in much the same way as sighted students do, except through the use of access technologies such as screen magnification, speech output and Braille output. That is, with the use of assistive technologies or when principles for designing accessible websites have been applied, visually impaired students can enjoy the same benefits their sighted peers do from resources accessible via the WWW.

The Internet and other on-line services are technologies that open up windows of opportunity to participate in the new information age, provided that the technologies

that can be used by all users are in place. The WWW is predominantly seen in the literature by Williamson (1995) and the Royal Institute for the Blind (1999) as offering at least a partial solution to the barriers which have previously existed for many people with disabilities, including people who are blind or sight impaired. The benefits are said to be partial largely because of the lack of proper user interfaces. This emphasis on having access technologies for visually impaired students reflects the goal of providing an independent life for the students in accessing information. Mann (2006) describes how persons with a disability take control over their lives, access the same opportunities and face the same choices in every-day life that non-disabled persons take for granted.

Among the student respondents, only one was able to use the WWW with minimal assistance. The independence the student showed in finding articles that were relevant to her assignments was attributed to the fact that she initially had some idea as how to search for information on the WWW. The WWW was therefore her first choice of source consulted for information among the range of sources that are available on campus. The Subject Librarians also observed that some students' first choice of information sources for research and assignments was the WWW. Two other blind postgraduate students who had used the WWW to some extent felt that for them to be able to get good results from their searches they needed to have good searching skills.

Zajicek (2000) pointed out that a deterrent to the use of the WWW by visually impaired people was their lack of skills in formulating search strategies [which is common amongst all students], and their lack of confidence in being able to use a computer without vision. It thus remains a challenge for the Subject Librarians to know how to instruct library users, specifically those with visual impairments, on search strategies which should be the same for all students. The need for information literacy in the middle of the year by the visually impaired students is an indication of the fact that during the library orientation programs that the UKZN-PMB library usually has at the beginning of each academic year or whenever a need rises, the visually impaired students were not accommodated. That is, no one in the library has ever taken the visually impaired students through the library resources to show them how they can be used.

The face-to-face sources of information were either formal (Subject Librarians) or informal (friends). Some of the respondents indicated that when they were given the assignment by their lecturers, they consulted the Subject Librarians for help in locating relevant sources for their tasks. One student mentioned that the Subject Librarian could not help him therefore referred him to the DU. The student mentioned that he went to the Subject Librarian because he knew that most students would consult Subject Librarians for a variety of academic information needs they had. The student further mentioned that he took the Subject Librarian's directive and went to the DU with a heavy heart. The students who turned to friends or class-mates got to know where to find the information they were looking for after discussing the topic at hand for the assignment. In terms of sources of information most used by people who are blind and sight impaired, Williamson (1995; 1998) found that friends were ranked third of twelve sources considered important for obtaining information for everyday life by participants in her study of visually impaired older people in Melbourne, Australia. Similar findings appeared in the British studies of Todd (1984) and Tinker *et al.* (1993), where friends were close to the top of the list of important sources.

Partially sighted students would access their electronic information by means of ZoomText facility. The blind students would scan and email information in print formats then access it through the use of JAWS or screen readers. Astbrink (1996: 5) indicated that people will have their favourite formats based on their personal circumstances and ability such as sightedness, the onset of vision impairment, level of literacy and nature of the material or information to be accessed.

What the students said were their preferred sources and formats of information were confirmed by the Subject Librarians' observations. The majority of the Subject Librarian respondents, who had, at some point in time helped visually impaired students, agreed that the student respondents preferred electronic information sources and information in electronic format, among which were bibliographic and full-text databases, the WWW and electronic journals.

After the students identified their information needs and they had located their preferred sources and formats of information, it was equally important to identify the

strategies they employed in searching for the information they needed for their assignments and lecture notes.

5.3.1.3 Actions taken to meet the students' information needs

Everyone has a different set of strategies for finding the information they need for whatever circumstance they may find themselves in. The different strategies employed in acquiring information also apply to the visually impaired students. Circumstances, such as being a student and visually impaired influenced the ways in which the respondents sought and acquire information. For example, all students need to consult a number of sources for their assignments.

The information behaviour model (Wilson's 1999) in Section 2.1.2 has been used as a frame-work which will assist in understanding the information seeking behaviour the students exhibited. For example, there were core approaches in the students' information behaviour that are captured in Wilson's model. These are discussed below.

Results gathered from the research indicated that the very important contextual factors in the respondents' information seeking were their degree of sightedness including the blind and whether they were undergraduate or postgraduate students.

The postgraduate students exhibited similar patterns in their information behaviour when they needed lecture notes which were presented in PowerPoint. The students said that they consulted their lecturers who, however, would not email them the notes at the time they needed them. That is, it was a long wait for the blind students before they could get the notes their sighted peers got the same day, and getting the notes was largely dependent on whether the lecturers remembered to email them the notes or not. The students, in this regard followed some of the systematic patterns that are shown in Wilson's model, however for most of them, their information seeking behaviour was never a success before they went to the DU. The visually impaired students went to the DU for information repackaging as mentioned in Chapter 4 and further shown in Figure 12.

Similar patterns of information seeking behaviour were shown by undergraduate partially sighted students who, when given the assignments, started with the OPAC to find information sources and then proceeded to the library shelves to get the material. Postgraduate blind students consulted the Subject Librarians who helped them locate relevant databases and other information sources for their assignments. Although all the respondents used the formal sources, among which were the Subject Librarians and the OPAC, the students who were partially sighted would extensively use the OPAC and then the Academic Reserve section, where their prescribed text books to support their tasks were placed on reserve by their lecturers. Wilson's model indicates that once the information user has a need, she or he can make demands on information systems or other information sources, which these students did. However, the DU emerged as a very necessary additional stage the students needed to complete their information seeking process. While some students followed the broken line in the model to reiterate the search process after they failed to get the information they needed, others turned to the nearest sources rather than starting all over again as shown in Figure 12 and in their individual schematic information seeking behaviour diagrams.

Informal sources such as classmates and friends were also mentioned by respondents as sources of information. Among the student respondents who turned to their friends, none of them obtained actual information. That is they did not get the information to help them write their assignments but rather information on where to get the information sources for their tasks. Those who engaged in a brainstorming session with classmates, got a clearer understanding of the task they were given. The importance of friends as a source of information for every day academic life emerged strongly in the literature about students with a visual impairment, such as in studies by Todd (1984), Brockmeier (1992), Tinker *et al.* (1993), Williamson (1995) and Shunmugan (2002).

The results of the study indicated that sources, such as the library OPAC, databases and consultations with the Subject Librarians to find relevant information for their academic work, were extensively used by all the students. This evidence points to the importance of having a variety of sources in an institution, such as UKZN-PMB where students can draw from, for a variety of reasons. UKZN-PMB needs structures

that will cater for everybody's needs. The situation at present indicates that almost all the students with visual impairments would very often fail to find the information they were looking for from the formal sources because of the barriers they encountered each time they seek for information. The failure to get the information on time and the additional burden of going to the DU for the repackaging of information affected the students adversely. Some of the students mentioned that they had to rely on make up tests or submit their assignments late even past the extended time they were granted. That is, the visually impaired students could not even meet the extended deadline because of limitations of the formal information systems at UKZN-PMB.

Before providing an overall analysis of the students' information seeking behaviour, it is of paramount importance to look at whether the students were able to use the information they got or not to complete the picture of their information behaviour.

5.3.1.4 Information use

The ability to obtain and use information about any subject from various sources gives a person the opportunity to choose a path from many alternatives instead of being limited to a few perhaps unwanted or non-feasible choices (Fullmer and Mjumder 1991: 17). As mentioned earlier in this study (Section 2.1.2), resolving users' gaps in knowledge involves identification of relevant information and use of relevant content. If use of identified relevant content is hampered, resolving the known gap in knowledge also fails. As Kebede (2002: 141) noted, use of information is directly related to understanding and meeting the information needs of users. The results of the study have indicated that there were many factors that prevented students with visual impairments from using identified information. Some of which are the interface between the students and the information system or the formats as discussed earlier.

The results of the study indicated that information needs of the visually impaired students were not readily met because of the barriers they encountered; they had to embark on laborious information seeking processes. For example, though most sighted students would go to the library and find information sources that they could use for academic related needs, the visually impaired students' material had to under-

go a process of repackaging before it could be considered useful, depending on the original format. If it was in print format, the information source had to be photocopied, scanned and then sent to the student electronically or photocopied so that the text could be enlarged.

It cannot be over-emphasised that although some of the respondents finally found the information they were looking for, a lot of time and energy was wasted in the process. Specifically, the content of the information had to meet their needs at that given time and be suitable for their information seeking situation. The results confirm what is contained in the literature in terms of viewing the 'use' of information beyond the physical act of getting hold of it into the intellectual realm of comprehension of facts which then becomes ones 'own knowledge' and even through the adoption phase to the application of knowledge (Case 2002: 103). In a nutshell, there must be a level of satisfaction on the users' part.

Satisfying information needs is a dynamic process during which absorbed knowledge may lead to renewed information needs (Kuhlthau 1991: Kebede 2000: 137). In instances where the students were not satisfied with the information found, which meant that the information seeking process failed, the students consulted alternative sources such as class-mates, for example. If the students failed to get information from the library they would go to the DU for the services that were provided there. Other students, when they could not get the information they were looking for, would try to understand the task at hand and then rephrase their need and then start the search all over again. Wilson's model shows that once the information obtained is found to be of use, the information seeking is complete. The information can be exchanged with others and the user will have a new need. The information seeking patterns exhibited by the students show that in cases where the information seeking failed, the students would turn to the nearest source which they perceived would have the information they wanted.

The Subject Librarians' responses showed that the students had to develop strategies other than consultation with the formal sources in the library to get the information they were looking for. The students' information behaviour suggested that if demands on formal sources fail, the respondents had to consult informal sources in order to get

information that they could use, and if the information found failed to meet the information need the respondent had to start the process all over again (see the broken line figure 2) used for the study. This shows that for the information seeking behaviour of the students, extra loops beyond Wilson's 1999 model, assistive devices provided by the DU were needed, which are depicted in the model, that synthesised both Wilson's model and the patterns that students presented (Figure 12).

The conceptual framework used for the study (Figure 2) depicted information seeking as occurring in a defined systematic way. However, the results drawn from the information seeking behaviour of the visually impaired indicated that information seeking can be flexible. Some of the possible pathways in Wilson's model were followed, such as when the respondents made demands on formal and informal sources as depicted in the model, some employed other strategies when seeking for information to write assignments and lecture notes. The students, however, were at liberty to consult the nearest sources of information, like turning to their friends rather than starting the information seeking process as shown in the Figure 12.

Other respondents' information seeking behaviours were in conformity with the systematic way that is shown in the model (Figure 2). The students who followed the systematic information seeking process were those who after failing to get relevant information would start the process all over again either by reformulating their search strategies or by trying to understand the requirement of the task at hand. When the process was a success they would use the information and even share it with other people such as their friends or class-mates. There were times when the strategies were the same and at times they deviated from each other. The results of the study highlighted in, Cheuk's (1998) words, the 'always-moving nature of the process of information seeking and use'. The flexibility that was shown by the students information seeking and Cheuk's point of view of information seeking, that information seeking does not happen in a linear manner, does not in anyway discredit the systematic ways shown in other information seeking/behaviour models. The need for flexibility offers another different perspective which compliments and extends the other models.

As indicated in Section 2.1.2, Wilson's model was used as a framework for a discussion of the findings. The model was further adapted to accommodate the different pathways in the various stages of the students' information behaviour. The addition of the stages to the model does not only accommodate the information seeking behaviour of the students, but also indicates that the UKZN-PMB main library needs to provide services to the visually impaired students, hence the role that the DU currently fulfils.

Additionally, the adaptation on Wilson's 1999 model caters for an academic environment. In an academic setting, when a student has been given a task, such as writing an assignment, consulting other sources of information in case the given source fails to provide useful information, is not an option. Although the students were faced with a number of barriers, they had to find other alternative routes because they were in an institution in order to achieve certain goals and meet certain standards. One of them said 'no-one has ever said to me, being a university student will be easy'. Typically, the visually impaired students had to make sure that they finally submit their work as do all students, but later.

The model of information behaviour used in this study has been compared with the information seeking tasks undertaken by the visually impaired students in the study. Whilst the framework of the study did not allow time for in-depth analysis, models the researcher perceived as appropriate for future analysis will be those that allow a degree of flexibility, taking into account findings identified in the research that show that searching behaviour differs according to the user, the task in hand, the resources used and (in the case of visually impaired users) the assistive technology used.

5.4 Barriers to the use of services

Information plays an important role in the lives of every student, including those with visual impairments. In the same line of thinking, Davies (2007) noted that there is also recognition of the fact that the power bestowed by information is not easily accessed by everyone, particularly those with disabilities such as visual impairments.

The results of the study indicated that the information seeking behaviours exhibited by the visually impaired students were hindered by a number of barriers that would have been eliminated or at least minimised by providing services that were universally designed. Universal design is defined by Kailes and Mac Donald (2006) as the design of products and environments to be useable by all, to the greatest extent possible. It is a broad spectrum solution that helps everyone not just people with disabilities. Universal design accommodates students with vision loss by being based on the belief that the broad range of human ability is ordinary and not special.

The students needed to write their assignments and others needed lecture notes all of which required the students to use some of the information services that are provided in the UKZN-PMB. However, students with visual impairments face the prospect of having to go through the laborious process mentioned earlier, to look for something useful while it was easy for their sighted peers.

5.4.1 Technological and personal barriers

The student respondents mentioned that because the library database computers did not have JAWS, the Subject Librarian would sometimes help them search the databases and read some of the results to them. The Subject Librarians were, at the end of the day, the ones who decided for the students on suitable information sources or content that might help the students. The students were, as a result, deprived of the liberty to decide for themselves on suitable information and information sources. The researcher, from her experience in assisting a blind student in searching for suitable information sources for the students assignments, tests, presentation and examination, learnt that it was always best to first ask the student on whether she had any specific sources for the task at hand or not. The onus lay with the students with visual impairments to decide what they wanted, especially because most of them knew exactly what they wanted. Knowing what the students needed before starting on the search minimised the time and effort both the student and the Subject Librarian would spend searching the internet when using electronic sources.

Some Subject Librarian respondents mentioned that even if they helped the visually impaired students search the databases, due to the time factor, it was not practical for them to read the entire search results to the students because they had other duties to attend to and other students to assist. Universal design in the provision of information services cannot be avoided any longer as it accommodates every one regardless of whether the person has an impairment or not. The technological barriers that were faced by the students were further compounded by the lack of training and expertise among the Subject Librarians in helping to overcome them.

As mentioned in Section 5.1.2, some of the students went to the library and consulted with the Subject Librarian whom they hoped would help them first understand the task at hand and secondly recommend information sources which could be appropriate for their assignments. It should be noted that the consultation with the Subject Librarian was at the preliminary stages of the information seeking process for of the students. They wanted to know what sources would be appropriate for their assignments. As noted earlier, the students got an inappropriate reception from some of the Subject Librarians who referred them to the DU 'as if they belonged there'. Nor did the blind postgraduate students who needed lecture notes in electronic format get them on time as they had to depend upon the good will of the lecturers concerned. The students said that when they approached their lecturers and asked for the notes which were presented in class in PowerPoint, the lecturers would either say that they needed to be reminded by the students or they would email the notes if they remembered. The above mentioned responses from the Subject Librarians and the lecturers pointed to attitudinal barriers.

Attitudinal problems from the institutions' staff members emerged strongly as a barrier from student respondents. The study revealed that some staff members were not willing to go a step further than necessary in meeting the visually impaired students' needs, and that they failed to accommodate them. The study revealed that most of the time visually impaired students had a problem with some of the services that were offered for all the university community, they could not get help immediately. As a result, they were unable to access services in the way their sighted peers did. It would have been better if all the Subject Librarians tried to find out the students' requests and then to assist them as they would do for sighted students rather

than just sending them off without making an effort to find out about their needs. Although the students did not mention whether the notes they required from the lecturers, who were presenting them in PowerPoint, were from their first lectures or not in the university, it would have been a good thing if the lecturers concerned tried to find out about who their students were. Learning more about their students would have minimised the trauma the students went through during the lectures when lecturers presumed students were to be sighted.

Some of the Subject Librarian respondents agreed with what the student respondents reported with regard to information service provision, as they said that sometimes they helped the visually impaired students or sent them to the DU. From the Subject Librarians' point of view, it was not an uncaring attitude, but simply they referred them to an office where they thought the visually impaired students would get the help they needed. The Subject Librarians' action simply meant that they did not know how to help. This lack of knowledge could be attributed to the fact that there is a low incidence of visual impairment, thus many students and adults have never been exposed to individuals who function without vision or with limited vision.

5.4.2 Financial barriers

Cost implications were cited by some of the Subject Librarians with regard to providing specialised services for the visually impaired students, rather than sending them to the DU. Lack of assistive technologies in the library was cited as a barrier by the student respondents. For example, the library database computers did not have JAWS hence the blind students had to use the LANs where this program is available, even if they wanted to use the library. The arguments about costs in service delivery, in a student-centred structure, presume that the visually impaired students' value as students is somehow either less than their sighted peers, or maybe not as cost-effective. UKZN therefore, needs to ask itself if visually impaired students consume more than their 'fair share' of the resources. Can the institution evaluate the students' potential worth in monetary terms, and if not, how does the institution then assign value against which to determine the 'cost'? Craven (2003) shared this same view when she said that the 'cost' of these elements cannot be calculated in monetary

terms, or, at least, not assigned solely to them for whom those accommodations are developed. The whole UKZN-PMB community shares the cost as it shares the benefits. In the end, the 'share' the visually impaired students contribute is at least as valuable as the share their sighted peers contribute. The IT infrastructure provided in the UKZN-PMB main library should therefore reflect the diverse information needs and information seeking behaviours of its users.

5.4.3 Sources and format barriers

Another barrier that the study revealed was that much of the information needed by the students was in sources and formats that were not suitable for the visually impaired students, as mentioned earlier. Information in print form, for example, posed a challenge to the students. Again, some of the notices on campus were posted in print, in the form of pamphlets and flyers. It showed that the presence of those who could not read print was not taken into account. Edwards and Lewis (1998: 302) pointed out that access to the printed word has long been recognised as a significant barrier to the integration of visually impaired individuals into school and work environments.

5.5 UKZN Policy on Students and Staff with Disabilities and other pertinent legislation underpinning the provision of services.

In response to the barriers on campus that were faced by the students who are visually impaired, the UKZN drew up a Policy on Students and Staff with Disabilities in 2004. The existence of barriers to the access and use of information services, as indicated by this research constitute inadequacy of UKZN's information system and are in direct conflict to what the UKZN undertook to do in its Policy on Students and Staff with Disabilities. Starting with the lack of assistive devices for the visually impaired students, Section 9.2 of the policy reads thus:

The University will progressively, where it will not pose an unjustifiable hardship, provide up-to-date adaptive and assistive technology for students and staff with disabilities. The Director: Information Technology and senior

staff within the Information Technology Division shall endeavour to ensure that access issues are considered when purchasing new software and hardware for general student/staff use and when developing teaching and resource material that is electronically delivered. Help sheets/information on the use of software and accessibility options and aids will be readily available in alternative formats throughout the University.

It is however, true that very little has been done in terms of providing assistive devices for the students. What is not stressed enough in the policy is the ‘unjustifiable hardship’ clause in the provision of such services. According to the definitions provided in the policy, ‘unjustifiable hardship’ is action that requires significant or considerable difficulty or expense and that would substantially harm the viability of the University or seriously disrupt the operation of the institution. This definition by its very nature, instead of shedding some light on the problem faced by the visually impaired students, further confuses the whole issue of the UKZN’s ‘commitment to make tertiary education and the working environment universally accessible and inclusive for all students and staff including those with disabilities.’ Section 5.3.2 in the study discusses the cost prohibitions that were sometimes cited in the provision of services to students with visual impairments. Cost effective planning is applying universal design in the provision of services so that everyone is accommodated. For example, a personal computer with ZoomText can be used by both sighted and visually impaired students. In doing so, there will be no need to budget for ‘extra equipment or extra services.

With regard to the barriers the students faced in the library, the researcher tried to solicit information from the library management on whether there were current or envisaged future initiatives that are in place to remove the barriers the students face in their daily academic life. The researcher corresponded with the UKZN Director of Library Services, now Dr Nora Buchanan (see Appendix 7), who promised to look through her files to see if there was any university-wide plan on the provision of library services to users or specifically students with disabilities. Other library personnel contacted at the same time as Buchanan showed enthusiasm pertaining to services the library renders to the students with disability and this also brought hope that maybe in the near future some further measures would be taken.

Correspondence received in May 2009 from the Director indicated that there is a Disability Advisory Forum, which at a meeting in 2004 had a librarian representing the Pietermaritzburg campus libraries. The librarian reported that attempts to make libraries accessible for students and staff with disabilities on this campus were an ongoing process. Buchanan also reported on progress reports given by campus libraries other than Pietermaritzburg campus libraries at a meeting in 2006. She reported that a workshop was to be arranged in the July 2009 vacation which all UKZN library staff would be required to attend (Buchanan 2009).

The University Policy on Students and Staff with Disabilities is not mute on issues that pertain to library services as it states:

The University Librarian will be responsible for ensuring efficient access to information for students and staff with disabilities. Within legal and budgetary constraints the latter shall ensure that appropriate resources are provided that utilise media which are alternate to printed media, for example, digital, Braille and/or audio recorded material for blind people.

The above-mentioned quotation from the UKZN policy clearly indicates that the primary and sole responsibility in the provision and access to information in the institution is vested in the library. To this end, what is known is that the UKZN-PMB libraries were represented in a meeting that was held by the Disability Advisory Forum in 2004. A much more promising endeavour is the up-coming workshop, as stipulated by Buchanan (2009), which will be attended by all library staff. The apparent 'slow pace' of action in this regard is possibly the result of having to provide 'within legal and budgetary constraints.'

UKZN-PMB is in the process of establishing a Carnegie Corporation funded Research Commons in the UKZN-PMB Main library. It is hoped that postgraduate visually impaired students will also benefit from such a useful facility to all postgraduate students and that the information system provided will be universally designed within the budgetary constraints that have been cited.

With regard to the problem that the students faced during lectures where visual aids were used, the policy clearly states that:

The University supports the use of varied and flexible presentation methods and teaching strategies to assist students with disabilities to undertake their studies. This may include, (among other things), making book lists and study guides available prior to the start of the semester, providing material in alternative formats and providing copies of lecture notes.

A notable feature in the policy (Section 8) is that responsibility for implementation of this policy was vested in, and not limited to, every member of staff. Lecturers and other staff members should know that all students have different but equally-valued learning needs. Consequently, it is incumbent upon all members of staff to ensure that students with visual impairments can participate fully in the curriculum, and that the kinds of educational activity contained within that curriculum has enough in-built flexibility to enable their participation. Essentially, what is required is for lecturers and other staff members to think flexibly about ways of achieving the same goals but by different means. This shows that all staff members should take it upon themselves to develop appropriate skills so as to enhance service delivery and communication with persons who have special needs and thus contribute to a friendly and welcoming organisational culture.

Other than legislation that underpins service provision to students with disabilities, specifically those with visual impairments, there are international and national standards compelling institutions of higher learning to provide services equitably. Over and above that, the UKZN's own Policy on Students and Staff with Disabilities spells the commitment the institution has in the provision of such services to students and staff with impairments. Implementation of the policy should be among the top priorities of the institution because a policy on paper cannot make any difference until it is implemented.

5.6 Summary

Information seeking behaviour shown by the visually impaired students in this study indicates that information is acquired in a number of ways other than the systematic number of stages that the model in Chapter 2 indicated. The results of the study show that the students had to move in between stages specifically because of the barriers they were experiencing in the provision of information services at the institution. Other students with visual impairments though were able to maintain the movement within the stages at the expense of their time and energy. Wilson's 1999 model used for this study successfully depicts that a user in need of information may use a variety of information sources, services, systems, or even contact individuals in an effort to solve a problem. The UKZN Policy on Students and Staff with Disabilities provides a framework on information service provision for students with impairments.

Chapter 6: Conclusions and recommendations

6.0 Introduction

The purpose of this study was to establish the visually impaired students' information seeking behaviour, which comprises identification of information needs, seeking and use. Identifying the students' information seeking behaviour helped to determine whether the services that are provided by the UKZN-PMB met their information needs or not. Starting with a brief return to the research questions, this chapter provides conclusions and recommendations based on the research findings. It will further present suggestions which will enable other researchers to probe into related subject areas which may not be adequately covered by the current study.

The literature has revealed that people with special needs are present and visible in most, if not all universities, as never before. Their presence reflects changes in societal attitudes, law, public policy, and government programs, and, perhaps most importantly, the views about people with special needs. The growing presence of this new 'minority' on campus poses challenges to all postsecondary institutions, such as UKZN-PMB, and commands change. Richards (2006) points out that the reason why universities have to change is that people with special needs will no longer accept being viewed and treated as burdens on the campus treasury and accommodated merely to avoid trouble with the law.

6.1 Revisiting the research questions

The following research questions formed the basis of the investigation.

- What was the demographic profile and academic level of study of visually impaired students at UKZN-PMB campus?
- What were their information needs?
- How did they meet those needs?
- Where did they find the information they were seeking?
- How did they use the information they had obtained?

- What were the barriers that they came across whilst seeking information?
- Was the UKZN-PMB doing anything with regard to improving services for the visually impaired students?
- How could services that were tailored to the visually impaired students be improved?

The purpose behind the research questions was to facilitate the development of recommendations that would improve services that are rendered for the visually impaired students at KZN-PMB.

6.2 Conclusions

Based on the arguments and findings of the research presented in the earlier chapters of the study, the following conclusions are made.

6.2.1 Suitability of the information services of UKZN-PMB for the visually impaired students

The results of the study have established that there is quite an array of services that are provided by the institution for the university community. Literature relating to the provision of services provided by the UKZN-PMB has revealed that the institution is aware of the diverse nature of the university community, hence the development of the UKZN Policy on Students and Staff with Disabilities (2004). However, the study concluded that the formal information services that are provided for all the students at UKZN-PMB do not sufficiently meet the needs of the students with visual impairments included in the study. Specifically, the UKZN-PMB Main library and its remote access via the LANs could not fully meet the visually impaired students' needs without further intervention. The study revealed that most of the students' information needs could not be met without the intervention of the DU. Even at the DU there were considerable delays in accessing assistance and assistive technology because of understaffing and inadequate equipment to repackage their information. Consequently, the students had delayed submission of assignments and relied on make up tests because of their inability to find relevant information in time.

6.2.2 Information needs

The information needs of the students mainly revolved around their academic information needs. The academic information needs that were described by the nine student respondents were overwhelmingly centred on writing assignments such as seminar papers, essays as well as writing examinations. The academic needs expressed by the majority of the respondents, who were partially sighted were not substantially different from the academic information needs of the three blind students. The study therefore concluded that the visually impaired students had the same academic needs to meet as any other student doing the same course or degree. The difference was, however, in the manner they went about meeting those needs; in having to rely on sources and assistance outside the UKZN-PMB library system. Their information needs, consequently were not readily met as they had to go through a series of additional steps before they met their needs and achieved their academic endeavours.

It is the view of this study that meeting information needs means resolving the students' identified gaps in knowledge. Resolving visually impaired students' needs, in Davies' (2007) words, 'requires that every need the students have has to be considered as a part of their information needs not as a part of their impairments.' That is to say, the needs of the visually impaired students should not be seen as aligned to their impairment but should be seen as a need similar to those of their sighted peers.

6.2.3 Information seeking behaviour

The research findings revealed that there was not much difference in information seeking behaviour among the student respondents in the targeted group. This perception was based on the format and number of sources used to satisfy their academic information needs. In the students search for information, the study established that all the respondents definitely used the library as the primary resource when searching for information. However, the DU played a major role in ensuring that the information that the students found was repackaged for them in a usable

format suited to each individual student's needs. The study concluded that the assistive technology provided by the DU and ITD is crucial in facilitating the use of library resources. Also, without the DU services the library would seldom meet the needs of the students with visual impairments. Friends and class-mates were also found to be useful in this regard by some student respondents.

The study, in addition, concluded that information seeking behaviour depicted by the students did not follow one particular or specified sequential pathway, but rather a number of routes which are depicted as each occurring in a specific sequence. The typical information seeking pathways the students portrayed revealed that barriers necessitated diverse information seeking behaviours. The students were able to use more flexibility in their information seeking behaviour and did not strictly adhere to a linear pattern of the systematic information seeking stages shown in Wilsons' 1999 Information Behaviour Model hence the added loops as shown by the adaptation.

6.2.4 Information access and use

All the student respondents revealed that before they could use the information they found for their assignments, they first had to overcome certain barriers. For some, if not most of the respondents, when the information seeking process encountered a barrier, the process of finding information that could be of use had to be rethought. This rethinking and the consequent search strategies are indicated in the pathways shown in the schematic diagrams depicting the students information seeking patterns and by the adaptation (Chapter 2 Section 2.1.2) in Wilson's 1999 Model of Information Behaviour.

Information use, in the study's context, recognises that before the book is read, for example, the user has to page through the book, scan the pages, and return it if unsatisfactory or when the intellectual use has been completed. The study revealed that the students were only able to use the information after a laborious exercise which involved time-consuming processes of repackaging into an accessible format due to the hindrances currently experienced in the university system in terms of service delivery for this group of students. The library information system in its

current level of provision could not immediately meet the students' information needs. The information that was acquired from the library was not readily usable without recourse to the further intermediation of the DU. The DU played a crucial role in supporting the library because of the afore-mentioned short-falls in the library system. The library should therefore seek to develop an accessible and inclusive system that does not depend on the DU to function.

The study has examined the information seeking behaviour of students with visual impairments which helped to establish whether the services that are provided by the UKZN-PMB as a whole meet the targeted group's information system. However, the UKZN Policy on Students and Staff with Disabilities specifically mandated the institution's library to ensure efficient access to information for the whole university community including those with different impairments.

6.2.5 Barriers to the use of services

Drawing on the literature, the findings of the study also indicated that the visually impaired students' information seeking behaviour is not different from the way other students would go about seeking information. It was established, however, that most of the time, as the visually impaired students were engaged in their information seeking process, they would, time and again, first have to deal with the barriers before their information needs could be met. The barriers as indicated by the study suggest only a partial success of the UKZN-PMB's Main Library information system to accommodate all of the community in its access to information.

6.2.6 Equity issues and the UKZN Policy on Students and Staff with Disabilities

A final conclusion that is drawn from the results of the study was that UKZN-PMB information system does not adequately meets the needs of all its students. Students with visual impairments are specifically discriminated against, in that the library, so far, does not provide assistive devices to enable the students to access and use the

system neither the universal design principles were incorporated into the initial system design.

The university needs to address these concerns because of equity issues and legal imperatives both at international and national level. The unequal provision of services is a contravention of The Promotion of Equity and Prevention of Unfair Discrimination Act 2000, which is the basis for the study. Chapter 5 of the Act, according to the SAHRC (2002), rules that the promotion of equality is the responsibility of persons operating in the public and private domains which includes institutions of higher learning such as the UKZN-PMB. The Promotion of Equity and Prevention of Unfair Discrimination Act 2000 is in line with the United Nations (UN) Convention on the Rights of Persons with Disabilities (2006) of which South Africa is a signatory. One of the principles of the UN convention is equality of opportunities which UKZN should observe.

The study has however, established that, considering the barriers that visually impaired students were facing, this act was not being implemented adequately. Students who are visually impaired are most likely to succeed in educational systems where appropriate instruction and services are provided in a full array of program options by qualified staff to address each student's unique educational needs, as required by law. There are those in the institution who still cannot access fundamental services. These need to be provided by the institution to afford students with visual impairments the opportunity to study in a learning environment appropriate to their needs. Students with visual impairments need an educational system that meets the individual needs of all students, fosters independence and is measured by the success of each individual in the institution and community.

All students pay the same fees and therefore should have equal access to the educational services provided by the UKZN-PMB. The UKZN Policy on Students and Staff with Disabilities 2004, as mentioned in Section 5.4 specifies how and in what manner the institution should act to redress this discrimination. Section 9.6 of the policy stipulates that the university librarian will be responsible for ensuring efficient access to information for students and staff with disabilities.

6.3 Recommendations

The study identified various issues pertaining to service provision to the visually impaired students. Recommendations are made to address the loopholes in the provision of specific services identified in the study which affected the students with visual impairments and further to address some of the consequences of the barriers in the formal information system. The recommendations focus more on the institution's library because, as mentioned earlier, the library has been given primary responsibility by the UKZN Policy on Staff and Students with Disabilities to ensure access and provision of information in the university. The study therefore recommends that the library should align itself with the policy and provide equal access to all. The proposed workshop, as mentioned by the Director (Section 5.5), is anticipated to be part of continuous endeavour by the library to provide services equitably and provides some hope for future interventions to curtail the current situation of unequal access. Specific suggestions are provided below in order of priority.

6.3.1 Conduct an access audit of the library services

The library needs to undertake a detailed access and usability audit (on students with visual impairments) in the library, specifically on the information systems and remote use. An access audit report would enable the library staff to gauge the level of service currently provided and enable future planning to be focused on areas of improvement (Irvall and Nielsen 2005). The access audit is an equivalent of conducting a needs assessment. A major barrier to adequate service provision is the lack of information about the students' information needs. During the access audit, the students with visual impairments should be involved as they would be the ones using the system, which will lead to service evaluation. Other stakeholders with relevant expertise should also be involved in the process. If there is collaborative work of many individuals and groups on campus to promote accessibility it would create an expanding, inclusive e-culture with a growing range of stakeholders.

As access issues are identified and discussed, awareness grows, and the desire to promote accessibility and find solutions, for example, increases. Accessible resources, training, and tools would be made available more widely and the result would be a

spirit of collaboration and community, such as involving senior library staff and Subject Librarians to participate in the audit. Astbrink (1996) advised that collaboration at multiple level from different areas of the campus including employing both top-down and bottom-up relevant people will enable the university community to embrace the campus policy as a clear sign that access to information by people with disabilities is a high priority.

Evaluation measures should be designed to assess the effectiveness of the services in meeting information needs of the visually impaired students. An option could be to adopt principles of universal design by removing the visual features on the web-based i-link system so that its user-interface can suit all the library users. Riley (2002) recommended that libraries should use strategies based on the principles of universal design to ensure that library policy, resources and services meet the needs of all people. The library will also determine what services should be instituted to enable the library to be more responsive to current and prospective users.

6.3.2 Develop a strategy and plan

The library needs to have a clear focus from the beginning and throughout implementation stages. Achievable goals should be developed, stages defined and progress celebrated, however small, toward improving service provision and accessibility. It is important to develop a campus-wide (that is not only the Cecil Renaud main library) commitment to accessibility and a clear acceptance of this as an ongoing effort, not a one-off project.

6.3.3 Budget

Recognition of the needs of people with disabilities should be included when planning budgets and allocating funds. An adequate budget for the project will be of paramount importance as developing a universally designed system or the purchase of assistive devices involves considerable funds. Employing accessible design principles as technology resources are created, updated, and purchased may reduce obstacles to access and use.

6.3.3.1 Purchasing of assistive devices and electronic information sources

The availability of a wide range of assistive technology makes it possible for an individual with almost any disability to operate a computer and telecommunication equipment (Closing the Gap, 2007). Assistive devices or adaptive technologies can play a major role in giving people with visual impairments access to information technology that enhances their academic and career opportunities. The selection of the devices must be driven by the assessed needs of visually impaired or blind students, that is, stakeholder participation is of paramount importance when selecting the adaptive technologies. Assistive technologies are an alternative to a universally designed information system. However, a mix of both universal design of information systems and as far as possible assistive technologies can be of use. For example, having some general technology that is as flexible as possible, for example JAWS for the visually impaired students.

The ongoing hardships or barriers that the visually impaired students face in the library and the time it takes for them to get the information they need, as mentioned earlier, requires that the library makes available the assistive technologies including screen readers, screen magnifiers, ZoomText word-prediction software, alternate input devices, and Braille note takers, needed by students who have disabilities. The study recommends the setting up of an adaptive workstation in the Main Library at UKZN-PMB. According to Burgstahler, Alice and Lewis (2008), the University of Texas library has a work station which provides computers with screen readers, screen magnifiers, word-prediction software, scanners, and other assistive devices. Similar provision was made at the University of Washington (Kailes and MacDonald 2006) where information technology available in the main library on campus included computers with screen readers and Braille embossers, as well as voice recognition software for visually impaired students.

6.3.3.2 Media formats and resource sharing

Library materials should ideally be accessible to all users. However, the print format has always posed problems to students with visual impairments. The study therefore, recommends that where textbooks are published in both audio and printed format, both formats should be purchased by the library to enable access for print-disabled users.

One of the difficulties in providing a broad range of special-format materials for blind and visually-impaired students is the relatively small population of blind students. Resource-sharing should be regarded as a fundamental aspect of providing services for blind and visually-impaired students. Libraries should facilitate access to the resources held by other libraries/agencies and be willing to make their own resources available to other agencies/individuals.

UKZN should take advantage of the library consortium to which it belongs, and share resources for the visually impaired students. Therefore, every library in the consortium should actively participate in inter-library lending both for materials and technical aids. Contacting colleagues and networking with people and organisations that are working with people with visual impairments is a means of further identifying resources and information.

The information needs of people with print disabilities are generally the same as those of sighted people. However, by definition, people with print disabilities cannot use conventional print materials. They must depend upon large format, audio (spoken word), tactile devices (such as Braille) and/or mechanical or optical aids - or a combination of these. For many partially sighted people, well-designed print information using a minimum 14 point size font makes reading easier (AFB 2008). Cory (2003) suggested that every print publication should have a clear, large print statement (14-16 point minimum) in a prominent place about the availability of alternative formats.

Where possible, UKZN-PMB library should liaise with organisations such as the South African Library for the Blind to get material in Braille and large print, just as it

subscribes to several thousand e-journals and e-books which are accessible to staff and students both on and off campus via the library website.

6.3.4 Accessible Websites

Websites should be developed based on the guidelines developed by the World Wide Web Consortium (W3C's WCAG). The UKZN-PMB's Information Technology Department (ITD) should work collaboratively with the library staff in such instances as they are mandated by the UKZN Policy on Students and Staff with Disabilities in Section 9.2 to endeavour to ensure that access issues are considered when purchasing new software and hardware for general student/staff use and when developing teaching and resource material that is electronically delivered. The ITD staff should provide consultation to the library ranging from assistance in evaluating software for accessibility during the procurement process, not forgetting the final users, which are the students with visual impairments, to guidance in the design of accessible websites which will include having a suitable interface for the students with visual impairments.

6.3.5 Implementation and monitoring

Having a staff member who has been involved in disability awareness training for many years could be useful as he or she will be able to monitor the implementation of the plans together with the other stakeholders. Specifically, in the case of UKZN-PMB the DU could effectively:

- Support and advise key staff members with their information provision such as repackaging of information;
- Develop and implement audits of access to current library information systems;
- Play an expert role in the development of a strategic plan for the library to address identified barriers and provide on-going advice to the library.

6.3.6 Staff attitudes and training

In order to provide effective library services to students with visual impairments, it is essential that all staff have appropriate attitudes to them. Attitudes based on ignorance or misconceptions create barriers and they are the most frequent cause of inadequate or non-existent services (Smith 2003).

It is recommended that staff training and awareness-raising programs be developed. For instance, staff should be aware of current terminology relating to disabilities and understand that the person comes before their impairments. Staff need to be educated about the abilities and realistic limitations of people with special needs.

Traditionally, the responsibility for accommodating the needs of students with disabilities was relegated to offices of disability services, but this mindset must be changed so that it is everyone's responsibility to create a positive learning environment for the visually impaired students. Matshediso (2007: 690) observed that staff members within the South African education institutes are allowed (not compelled) to choose whether they want to 'help' disabled students or not. The attitude of 'people in need and those who need help' has been strongly opposed by some scholars such as Mann (2006), Shunmugam (2002), Philpott (1994) and Brockemeier (1992). That is, people with impairments can function well and live independently in an enabling environment.

In Davies' (2007) words, 'although individuals often want to offer services to the students with visual impairments, they often do not know how to do it.' It is therefore imperative that staff members get a better understanding about the range of visual impairments. Better understanding can be achieved through training by those who have expertise in the disability by providing services to students with visual impairments.

Training should be addressed in a way which educates and dispels attitudinal barriers and common misconceptions about disabilities. This should be an ongoing process and not limited to one training session. Informal training such as the one proposed for

July vacation (Section 5.5) should be run regularly as part of staff development programmes. Such workshops will give an opportunity to discuss current issues and concerns in a wider arena. Cory (2003) emphasised that access to training on an ongoing basis is essential for all team members in order to remain current with advances in the field (relating to visual impairments), such as the rapid advances in technology that are critical to the student with a visual impairment. Training of the library personnel, for example, will enable them to conduct information literacy classes for the visually impaired students. Training would include showing the students how to remotely access the library's e-resources with passwords for logging on to the library databases. It can not be over emphasised that students with visual impairments have the right to an appropriate education that is guided by knowledgeable specialists who work collaboratively with them and other education team members.

Training in universal design could enable professionals such as the Subject Librarians, lecturers and others to have a realistic picture of what the student can do and of those situations where assistive devices are really needed. Having a universally designed information system will enable the students with visual impairments to meet their academic deadlines, that is, submit their work on time the same way their sighted peers do. Money spent by the institution when incorporating universal design principles in the system will enable the university to work within the present budgetary constraints because there will be no need to buy extra equipment to cater for those with impairments. Training of the university personnel will also enhance and promote awareness of disability on campus.

As mentioned earlier, during the application process, students are required to declare their disabilities. The reason behind the declaration is understood to mean that whatever impairment the student has, this will be accommodated and the student with the impairment will be treated and will benefit from the university system like the other students. It is also recommended that a clear protocol be developed whereby the teaching staff are made aware of the diversity of the students' profiles. This will enable the academics to plan in advance for students with disabilities. An example could be liaising with the Disability Unit to have lecture notes for students with visual impairments reformatted into Braille or a usable electronic format before hand.

6.4 Future research

During this study, certain areas were identified that can provide opportunities for further research such as:

- Information professionals are tasked with acquiring, organising, providing access to and disseminating information to everybody, including students or people with disabilities. Thus it is suggested that research be undertaken to ascertain the possibilities of including disability studies in Library and Information Studies, so that students can be equipped with knowledge and expertise in the provision of services to students or people with disabilities.
- More has to be discovered about library and information needs of students with disabilities on all the UKZN campuses as this will shape the provision of services equitably to the whole university community.

6.5 Summary

Chapter 6 provided conclusions on the major research findings of the study. Recommendations were made which could inform policy and practice at the UKZN-PMB library and at UKZN in general. A priority list of improvements of services required by the UKZN-PMB library has been suggested.

Everyone has a right to education and thus provision of services is a human rights issue. A further right is for all students to have their particular information needs addressed without this being perceived by them as being fraught with an unreasonable level of difficulty. UKZN-PMB can show true commitment by providing an environment where the provision of services are not viewed as additional or optional but rather as a core element in the overall provision of education. The UKZN through the Policy on Students and Staff with Disabilities (2004) shows its commitment not just to doing the minimum amount of work required to comply with the policy, but to improving the institution's information system as much as it possibly can with available resources.

REFERENCES

- Abell, M., Bauder, D., & Simmons, T. (2004). Universally designed online assessment: implications for the future. *Information Technology and Disabilities*, 10(1) Available at <http://www.rit.edu/~easi/itd/itdv10n1/abell.htm> Accessed 28/10/2008.
- Adams, S. S. and Pierce, K. 2006. Is there a transgender canon?: information seeking and use in the transgender community. Available at http://www.cais-acsi.ca/proceedings/2006/adams_2006.pdf Accessed 28/10/2008.
- Aina, L. O. 2004. Towards improving information access by semi-and non-literate groups in Africa: a need for empirical studies of their information-seeking and retrieval patterns. In Bothma, T. and Kaniki, A. (eds). *Progress Library in Information Science in South Africa. Proceedings of the third biennial DISSAnet Conference*. Pretoria, 26-27 October 2000: 55-63.
- Allison, B., O'Sullivan, Owen, A., Rice, J., Rothwell, A. and Saunders, C. 1996. *Research skills for students*. London: Kogan Page.
- American Foundation for the Blind. 2008. *Expanding possibilities for people with vision loss*. Available at <http://www.afb.org>. Accessed 28/10/2008.
- Arter, C., Heather, L. M., McCall, S., McLinden, M. and Stone, J. 1999. *Children with visual impairment in mainstream settings*. London: David Fulton.
- Astbrink, G. 1996. *Everybody's business: consumer information access for people who are blind or vision impaired*. Prahran, Vic.: National Federation of Blind Citizens.
- Atinmo, M. I. 2007. Setting up a computerized catalogue and distribution database of alternative format materials for blind and visually impaired persons in Nigeria. *Library Trends* 55(4): 830-847.

- Babbie, E. and Mouton, J. 2001. *The practice of social research*. Oxford: University Press.
- Barnes, C. 1997. A legacy of oppression: a history of disability in Western culture. In Barnes, C. and Oliver, M. (eds.) *Disability studies: past present and future*. Leeds: The Disability Press.
- Barnes, C. and Mercer, G. 2004. *Implementing the Social Model of Disability: theory and research*. Leeds: Disability Press.
- Barnes, C. and Mercer, G. 1996. *Exploring the divide: illness and disability*. Leeds: The Disability Press.
- Barton, L. and Oliver, M. 1997. *Disability studies: past present and future*. Leeds: The Disability Press.
- Belkin, N.J.1978. Information concepts for information science. *Journal of Documentation* 34(1): 55-85.
- Belkin, N. J., Oddy, R. N. and Brooks, H. M.1982. ASK for information retrieval part 1: background and theory. *Journal of Documentation* 38(2): 67-71.
- Bleakney, A. 2002. Blind students face barriers to learning. The daily Illini Online. Available at http://www.dailline.com/feb14/news/printer/news_story_01-printer.shtml accessed 14/10/2008.
- British Council of Disabled People, 2003. *The social model of disability and emancipatory disability research – briefing document*. Available at <http://www.bcodp.org.uk> Accessed 30/10/2008
- Brockmeier, K. C. 1992. Academic information needs and information seeking behaviour of blind or low-vision sighted college students. PhD dissertation. Florida: Florida State University, School of Library and Information Studies. The State University.

Brophy, P. and Craven, J. 2007. Web accessibility. *Library Trends* 55(4): 950-972.

Buchanan, N. 2009. E-mail letter to the author re initiatives relating to students with disabilities. Durban, May.

Budricks, D. 2007. An exploration of the information needs experienced by visually impaired students at the Pietermaritzburg campus of the University of KwaZulu-Natal. Information Studies, School of Sociology and Social Studies. Pietermaritzburg: UKZN.

Burgstahler, S., Anderson, A., Slatin, J. and Lewis, K. 2008. *Accessible IT: lessons learned from three universities*. Available at <http://www.ariadne.ac.uk/issue33/ACCESSIBLE IT.htm> Accessed 08/08/2008.

Bystrom, K. and Jarvelin K. 1995. Task complexity affects information seeking and use. Available at <http://www.sciencedirect.com/science?> Accessed 30/10/2008

Canadian National Institute for the Blind. 1996. *Un-unequal playing field: a report on the needs of people who are blind or visually impaired living in Canada*. Available at http://cnib.ca/eng/publications/needsreport/UnequalPlayingField_ENG_FINALWORD.pdf Accessed 27/10/2008.

Case, D. O. 2002. *Looking for information: a survey of research on information seeking, needs, and behaviour*. Amsterdam: Academic Press.

C A S E. 2008. Research for the Department of Health on Service Provision for people with disabilities. Available at <http://www.doh.gov.za/docs/misc/1999/disabilities.pdf> Accessed 16/09/08

Chen, C. and Herson, P. 1982. *Information Seeking*. New York: Neal-Schuman.

Cheuk, B. 1998. Modelling the information seeking and use process in the workplace: employing sense-making approach. Available at <http://informationr.net/ir/4-2/isic/cheuk.html> Accessed 10/11/2008.

Cheverst, K. Fitton, D. Finney, J. and Dix, A. 2003. Supporting interaction with office door displays. Available at <http://www.comp.lancs.ac.uk/~fittond/MU3I-pres2.ppt>. Accessed 08/08/2008.

Chung, J. S. and Neuman, D. 2007. High school students' information seeking and use for class projects. Available at <http://web.ebscohost.com/ehost/pdf?vid=2&hid=17&sid=54173118-a4ab-4851-9865-d21b960e04e2%40sessionmgr2> Accessed 28/10/2008

Closing the Gap. 2007. *Changing lives with assistive technology*. Available at <http://www.closingthegap.com/> Accessed 28/10/2008.

Cohen, L., Manion, L. and Morrison, K. 2007. *Research methods in education*. 6th ed. London: Routledge.

Cohen, L., Manion, L and Morrison, K 2000. *Research methods in education*. 5th ed. London: Routledge.

Cone, J. D. and Foster, S. L. 1998. *Dissertation and theses: from start to finish*. London: American Psychology Association.

Cory, R. 2003. Beyond compliance: articulation of the role of disabled students services on campus. In Cory, R., Taylor, S., Walker, P. and White, J. *Beyond compliance: an information package on the inclusion of people with disabilities in postsecondary education*. Available at http://thechp.syr.edu/BCCC_PACKAGE.HTML accessed 28/10/2008

Cox, C. and Hall, C. 1993. Information seeking behaviour and information use of Sociologists: a review of the literature. Available at <http://www.pages.drexel.edu/~ctc27/rol.html> Accessed 10/10/2008.

Craven, J. 2003. Electronic resources by visually impaired people. *Information Research* 8(4) Available at <http://informationr.net/ir/8-4/paper156.html> Accessed 28/10/2008.

Davis, G. R. 2000. Information-seeking behaviour of undergraduate students: do information retrieval systems meet their needs? In *ProLISSA: proceedings of the first biannual DISSAnet Conference "Southern African LIS research in progress"*, Pretoria, 26-27 October 2000: 55-63.

Davies, J. E. 2007. An overview of international research into the library and information needs of visually impaired people. *Library Trends* 55(4): 785-796.

Davies, J. E., Wisdom, S. and Creaser, C. 2001. *Out of sight but not out of mind: Visually impaired people's perspectives of library and information services* (LISU Occasional Paper No. 29). Loughborough, England: Loughborough University, Library & Information Statistics Unit.

Department of Education. 2001. *Education White Paper 6 Special Needs Education: Building an inclusive education and training system*. Pretoria: Government Printers.

Department of Education. 1997. *Higher education Act No. 101*. Available at http://www.che.ac.za/documents/d000004/Higher_Education_Act Accessed 30/09/2008

Department of Education. 1994. *Guidelines for Disability Services in Higher Education*. Pretoria: Government Printers.

Department of Justice and Constitutional Development. 1996. *Constitution of the Republic of South Africa (Act 108 of 1996)*. Available at <http://www.polity.org.za/govdocs/constotution/saconst.html> Accessed 28/10/2008.

Department of Labour. 2002. *Employment Equity Act No. 55 of 1998: Code of Good Practice: Key Aspects on the Employment of People with Disabilities*. Available at

http://www.workinfo.com/free/Sub_for_legres/Data/Equity/disabilitycode.htm

Accessed 30/09/2008.

Department of Labour. 1998. *Employment Equity Act No.55 of 1988*. Available at

<http://www.labour.gov.za> Accessed 30/ 09/2008.

Dervin, B. and Nilan, M. 1986. Information needs and uses. In Williams, M. E. (ed.) *Annual review of information science and technology*. New York: Knowledge Industry.

Dick, A. L. 2005. Power is information: South Africa's Promotion of Access to Information Act in context. *Mousaion* 23(1): 1-18.

Dillman, D. A. 2000. *Mail and internet surveys: the tailored design method*. 2nd ed. New York: John Wiley and Sons.

Disabled People South Africa. 2001. Pocket guide on disability equity. Pretoria: DPSA, Parliamentary Office.

Durrheim, K. 2002. Quantitative analysis. In Terre Blanche, M. and Durrheim, K. (eds.) *Research in practice: applied methods for the social sciences*. Cape Town: UCT Press.

Edwards, B. J. and Lewis, S. 1998. The use of technology in programs for students with visual impairments in Florida. *Journal of Visual Impairment and Blindness*, May, 302-312.

Etheridge, D. T. and Mason, H. (eds). 1994. *The visually impaired: curricular access and entitlement in further education*. London: David Fulton.

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 biannual DISSAnet Conference 28-29 th October 2004*, Farm Inn, Pretoria, South Africa: 67-96

- Fullmer, S. and Majumber, R. K. 1991. Increased access and use of disability related information for consumers. *Journal of Rehabilitation* 57: (17-22).
- Gash, S. 2000. *Effective literature searching for research*. 2nd ed. Aldershot: Gower.
- Gay, L. R. 1996. *Education research: competencies for analysis and application*. 5th ed. New Jersey: Merrill/ Prentice Hall.
- Gillham, B. 2000. *Developing a questionnaire*. London: Continuum.
- Hart, C. 2005. *Doing your masters dissertation*. London: Sage.
- Holstein, J. A., and Gubrium, J. F. (eds.) 2003. *Inside interviewing: new lenses new concerns*. London: Sage.
- Howell, C. 2006. Disabled students and higher education in South Africa. Available at [http://: www.hsrepress.ac.za](http://www.hsrepress.ac.za) Accessed 10/10/2008.
- Howell, C. and Lazarus, H. 2003. Access and participation for students with disabilities in South African higher education: challenging accepted truths and recognizing new possibilities. *Perspective in education* 21(3): 58-74.
- Huang, L. 2004. Web search behaviour of Internet experts and newbies. *Computer Networks* 33(1-6): 337-346.
- Ikoja-Odongo, J. R. 2002. A study of information needs and uses of the informal sector of Uganda, KwaDlangezwa: University of Zululand (Unpublished PhD dissertation).
- Ikoja-Odongo, J. R. and Mostert, J. 2006. Information seeking behaviour: a conceptual framework. *South African of Libraries and Information Science* 72(3): 145-158.

Information and Telecommunication Needs Research. 1995. A needs analysis survey of users of an audio book library. *Journal of Visual Impairment and Blindness*. (2)89: 161-165.

Ingstad, B. and Whyte, S. R. (eds). 2007. *Disability in local and global worlds*. Berkeley: University of California Press.

Ingwersen, P. and Jarvelin, K. 2004. Context in information retrieval. In *ProLISSA. Progress in Library and Information Science in Southern Africa. Proceedings of the third biannual DISSAnet Conference 28-29 th October 2004*, Farm Inn, Pretoria, South Africa.

Irvall, B and Nielsen, G. S. 2005. *Access to libraries for persons with disabilities: checklist*. The Hague: International Federation of Library Associations. Available at <http://www.ifla.org/VII/s9/nd1/iflapr-89e.pdf> Accessed 30/11/2008/

Kailes, J. I. and Mac Donald, C. 2006. *Providing Information in Alternative Formats*. Available at <http://www.westernu.edu/> accessed 14/09/2008.

Kaniki, A. 2001. Community profiling and needs assessment. In Stilwell, C., Leach, A. and Burton, S. (eds.) 2001. *Knowledge, information and development: an African perspective*. Pietermaritzburg: University of KwaZulu-Natal.

Kaniki, A. M. 1995. Exploratory study of information needs in the Kwa-Ngwanase (Natal) and Qumbu (Transkei) communities of South Africa. *South African Journal of Library and Information Science* 63(1): 9-18.

Kaniki, A. M. 1992. Information seeking and information providers among Zambian farmers. *Libri* 41(3): 147-164.

Kebede, G. 2002. Modelling the information needs of users in the electronic information environment. PhD Thesis. School of Human and Social Studies, University of Natal, Pietermaritzburg, South Africa.

Kothari, C. 2004. *Research methodology: methods and techniques*. 2nd ed. New Delhi: New Age International.

Krikelas, J. 1993. Information seeking behaviour: patterns and concepts. *Drexel Library Quarterly* 19: 5-20.

Kuhlthau, C. C. 1993. A principle of uncertainty for information seeking. *Journal of Documentation* 49(4): 339-355.

Kuhlthau, C. C. 1991. Inside the search process: information seeking from the users' perspective. *Journal of the American Society for Information Science* 42(5): 361-371.

Kuppers, P. 2004. Disability and contemporary performance: bodies on edge. Available at <http://www.communitydance.org.uk/metadot/index.pl>? Accessed 10/09/2008.

Large, A and Beheshti, J. 2000. Perspectives on children's navigation of the WWW: does the type of search task make a difference? *Information Processing and Management* (30)4: 499-513.

Leach, A. and Stilwell, C. 2008. Research proposal seminar discussion. Pietermaritzburg: Information Studies, School of Sociology and Social Studies, UKZN.

Leedy, P. D. and Ormord, J. E. 2001. *Practical research: planning and design*. 7th ed. Upper Saddle River: Merrill Prentice Hall.

Lewis-Beck, M. S. 1994. *Research practice*. London: Sage.

Locke L. F, Spiduso, W. W. and Silverman, S. J. 1998. *Reading and understanding research*. Thousands Oaks, CA: Sage.

Luxton, K. and Lewis, A. 1990. Training students in adaptive computer technology. *Journal of Visual Impairment and Blindness* 3: 523-525.

Lynch, P. 1994. Supporting services in an integrated setting. In Etheridge, D. T. and Mason, H. (eds.) *The visually impaired: curricular access and entitlement in further education*. London: David Fulton.

Maepa, E. D. 2000. Information needs and information-seeking patterns of rural people in the Northern Province. PhD dissertation. Johannesburg: Rand Afrikaans University.

Mann, D. 2006. Adaptive technologies for individuals with visual Impairments: scholarly and consumer perspectives. *Dalhousie Journal of Information and Management* 2(1). Available at http://djim.management.dal.ca/issues/issue2_1/mann/index.htm Accessed 16/09/08.

Matshedisho, R. 2007. Access to higher education for disabled students in South Africa: a contradictory conjuncture of benevolence, rights and the social model of disability. *Disability and Society* 7(22): 685-699.

McGregor, J. H. 1993. Cognitive processes and the use of information: a qualitative study of higher-order thinking skills used in the research process by students in a gifted program. *School Library Media Annual* (12): 124–133.

Mercer, G. 2004. From critique to practice: emancipatory disability research. In Barnes, C. and Mercer, G. (eds). *Implementing the Social Model of Disability: theory and research*. Leeds: Disability Press.

Moodley, S. 2008. Open lecture on disability issues. Pietermaritzburg: UKZN.

Mostert, B. J. and Ocholla, D. N. 2005. Information needs and information seeking behavior of parliamentarians. *South African Journal of Libraries and Information Science* 71(2): 136-139.

Neuman, D. 2002. Learning in an information rich environment: preliminary results. Paper presented at the Treasure Mountain Ten Research Institute, Excelsior Springs, KS.

Neuman, D. 2001. Students' strategies for making meaning from web information. In D. Kraft (Ed.), *Proceedings of the 64th Annual Conference of the American Society of Information Systems and Technology*. Silver Spring, MD: American Society for Information Science and Technology

Neuman, D. 1993. Designing databases as tools for higher-level learning: insights from instructional systems design. *Educational Technology Research and Development*, 41(4): 25–46.

Neuman, D. 1991. *Organizing information to facilitate its use: an exploratory study. Final report to Montgomery County public schools*. Rockville, MD: Montgomery County.

Ngulube, P. 2005. Research procedures used by Master of Information Studies students at the University of Natal in the period 1982 to 2002 with special reference to their sampling techniques and survey response rates: a methodological discourse. *International Information and Library Reviews* 37(2): 127-143.

Office of the President. 2000. *The Promotion of Equality and Prevention of Unfair Discrimination Act No.4*. Cape Town: Government Printers.

Office of the Deputy President. 1997. *Integrated National Disability Strategy White Paper*. Available at <http://www.info.gov.za/whitepapers/1997/disability.htm> Accessed 09/10/2008

Oliver, C. 2004. A legacy of oppression: a history of disability: if I had a hammer. In Barnes, C. and Mercer, G. (eds). *Implementing the Social Model of Disability: theory and research*. Leeds: Disability Press.

The Open University. 2008. Services for disabled students. Available at <http://www.open.ac.uk/disability/pages/common/index.php> Accessed 10/10/2008

Pettigrew, K. E. (1996). Modelling the information seeking of professionals. *Library Quarterly* 66(2): 161-193.

- Pezeshki-Rad, G. and Zamani, N. 2005. Information-seeking behaviour of Iranian extension managers and specialists. *Information Research* 10(3) paper 229. Available at <http://InformationR.net/ir/10-3/paper229.html> Accessed 26/10/08
- Philpott, S.C. 1994. Amawoti: responding to the needs and rights of people with disabilities. M.A dissertation. Pietermaritzburg: University of Natal. Powell, R. R. 1999. Recent trends in research: a methodological essay. *Library and Information Science* 21(1): 91-119.
- Pitts, J. 1994. Personal understanding and mental models of information: a qualitative study of factors associated with the information seeking and use of adolescents. Unpublished doctoral dissertation, Florida State University, Tallahassee, FL.
- Rains, S. and Min, D. 2008. *Culture in the further development of universal design*. Available at <http://www.disabilitynet.net/mod/forum/discuss.php?d=763> Accessed 12/10/2008.
- Richards, C. 2006. *California's comprehensive strategy to improve the employment rate of people with disabilities: stakeholder perspectives*. Available at http://www.cdihp.org/pdf/stakeholders_report_final.PDF Accessed 26/10/08.
- Riley, L. 2002. Principles of universal design: a solution for ICT users. Available at http://www.design.ncsu.edu/cud/about_ud/udprinciplestext.htm Accessed 28/10/2008.
- Royal National Institute for the Blind. 1999. An investigation of the information needs of blind and sight-impaired people. Available at <http://www.rnib.org.uk/> Accessed 10/08/2008.
- Rowland, C. 2007. Accommodations for students with diverse needs. Available at <http://www.pepnet.org/> Accessed 19/09/2008.
- Sarantakos, S. 1993. *Social research*. 2nd ed. London: Macmillan.
- Shakespeare, T. 2006. *Disability rights and wrongs*. New York: Routledge.

Shawn L. H. 2008. Making the web accessible to people with disabilities, W3C Web Accessibility Initiative (WAI) Available at <http://www.w3.org/WAI/presentations/2008/2008-06June-MalaysiaUPS> Accessed 28/10/2008

Shunmugam, M. 2002. An exploration of the barriers, as experienced by visually impaired students studying at the University of Natal. M.A thesis. Durban: University of Natal.

Smith, V. 2003. Why being an ally is important. In Cory, R., Taylor, S., Walker, P. and White, J. *Beyond compliance: an information package on the inclusion of people with disabilities in postsecondary education*. Available at http://thechp.syr.edu/BCCC_PACKAGE.HTML accessed 28/10/2008.

South African Human Rights Commission. 2002. *Towards a barrier-free society*. Available at http://www.sahrc.org.za/sahrc/cms/publish/cat_index_41.shtml Accessed 04/06/2008.

Statistics South Africa. 2001. *Census 2001: prevalence of disability in South Africa*. Available at <http://www.statssa.gov.za/census01/html/Disability.pdf> Accessed 29/07/2008.

Stilwell, C. 2004. Guiding doctoral dissertations: some issues. Unpublished guidelines. Pietermaritzburg: University of KwaZulu-Natal.

Stilwell, C. 2000. Venturing into academic journal publishing: some issues and guidelines for new authors. *African Journal of Library, Archives and Information Science* 10(2): 167-175.

Tackie, S. N. B. and Adams, M. 2007. Information needs and seeking behaviour of engineers in Ghana: a case study of the Volta River Authority. *African Library, Archives and Information Science* 17(2): 69-78.

Terre Blanche, M. J. 2006. *Research in practice: applied methods for the social sciences*. Cape Town: University of Cape Town Press.

Terre Blanche, M and Durrheim, K. 1999. *Research in practice*. Cape Town: University of Cape Town Press.

Tinker, A., McCreddie, C., and Salvage, A. 1993. *The information needs of elderly people: an exploratory study*. London: Age Concern Institute of Gerontology.

Todd, H.1984. The information needs of newly retired people. *Health Libraries Review* 1: 22-35.

Understanding research: an introduction to reading research. 2nd ed. 2004. Pietermaritzburg: School of Education, Training and Development, UKZN.

United Nations General Assembly. 2007. Convention on the Rights of Persons with Disabilities. Available at <http://www.un.org/disabilities/convention/conventionfull.shtml> Accessed 20/10/2007

United Nations General Assembly. 1993. *Standard Rules on the Equalisation of Opportunities for People with Disabilities*. Available at http://www.who.int/disabilities/policies/standard_rules/en/index.html Accessed 28/10/2008.

United Nations handbook. 2000. New York: DPI.

University of KwaZulu-Natal. 2007. Code of Conduct for Research. In Research Policy and Research Ethics. Available at <http://research.ukzn.ac.za/> Accessed 29/09/2008.

University of KwaZulu-Natal. 2004. *Policy of Students and Staff with Disabilities*. Pietermaritzburg: UKZN. Available at http://www.ukzn.ac.za/department/data/equity_staffstudis.pdf. Accessed 28/10/2008.

Urquhart, C. 2001. Bridging information requirements and information needs assessment: do scenarios and vignettes provide a link? *Information Research* 6(2). Available at <http://informationr.net/ir/6-2/paper102.html> Accessed 28/10/2008.

van de Wijngaert, L. 1999. A policy capturing study of media choice: the effect of information of needs and user characteristics on media choice. In Wilson T. D. and Allen, D. K. *Exploring the contexts of information behaviour: proceedings of the 2nd international conference on research in information needs, seeking and use in different contexts*, 13-15 August 1998, Sheffield.

Venter, S. and Lotriet, H. 2005. Accessibility of South African websites to visually disabled users. *South African Journal of Information Management* 7(2): 13-25.

Welman, C., Kruger, F. and Mitchel, B. 2005. *Research methodology*. 3rd. Cape Town: Oxford University Press.

White, J. 2003. *Beyond compliance: an information package on the inclusion of people with disabilities in postsecondary education*. Available at http://thechp.syr.edu/BCCC_PACKAGE.HTML Accessed 10/10/2008.

Williamson, K. 1998. Discovered by chance: the role of incidental information acquisition in an ecological model of information use. *Library and Information Science Research* 20(1): 23-40.

Williamson, K. 1995. Older adults: information, communication and telecommunications. PhD thesis. Melbourne: Department of Social Sciences, RMIT.

- Williamson, K., Schaude, D. and Bow, A. 2000. *Information seeking by blind and sight impaired citizens: an ecological study*. Available at <http://informationr.net/ir/5-4/paper79.html> Accessed 02/09/2008
- Wilson, T. D. 2000. Human Information behaviour. *Informing Science* 3(2): 49-55.
- Wilson, T. D. 1999. Models of information behaviour research. *Journal of Documentation* 55(3): 249-270. Available at <http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldAbstractOnlyArticle/Pdf/2780550301.pdf> Accessed 21/04/2008.
- Wilson, T. D. 1981. On user studies and information needs. *Journal of Documentation* 37:3-15.
- Wolpe, A., Quinlan, O. and Martinez, L. 1997. Gender equity in education: a report by the Gender Equity Task Team, Department of Education, South Africa. Available at <http://www.getcited.org/?PUB=100459807&showStat=Ratings>. Accessed 08/08/2008.
- World Health Organisation. 1999. *A beginner's guide to ICIDH-2*. Available at <http://www.who.int/msa/mnh/ems/icidh/brochure/whatis.htm> Accessed 07/08/2008.
- World Wide Web Consortium. 2006. Web Accessibility Guidelines: The New W3C WCAG 2.0. Available at http://www.masternewmedia.org/news/2006/09/09/web_accessibility_guidelines_the_new.htm. Accessed 25/11/2008.
- Zajicek, M. 2000. Interface Support for elderly people with impaired sight or memory. Available at http://www.ui4all.gr/UI4ALL2000/files/Short_papers/Zajicek.pdf. Accessed 28/10/2008

Appendices

- Appendix 1 Letter of consent for the Subject Librarians
- Appendix 2 Letter of consent for the Disability Unit Coordinator
- Appendix 3 Letter of consent for the visually impaired students
- Appendix 4 Interview schedule for visually impaired students on their perception on service provision by the UKZN-PMB
- Appendix 5 Survey instrument for the Subject Librarians on their perception on service provision by the UKZN-PMB main library (Cecil Renauld) to visually impaired students
- Appendix 6 Survey instrument for the DUC on service provision by the DU to the visually impaired students.
- Appendix 7 Correspondence with the UKZN Director of Library Services

Appendix 1 Letter of consent for the Subject Librarians

Dear Participant

I am a Masters student at the University of KwaZulu-Natal (UKZN) investigating the information seeking behavior of visually impaired students on the Pietermaritzburg (PMB) campus of the university.

I am inviting you to participate in the research because of the valuable contribution you can make in terms of determining whether the services that are provided by university, specifically the main library, meet the visually impaired students' information needs or not, to identify barriers that they come across as they seek for information, and how best can the services be improved.

If you agree to participate I would like you to complete the questionnaire which will be collected after five days. I commit myself to keeping the information you provide confidential. You have the right to withdraw at any point of the study, for any reason, and without any prejudice, and the information collected will be turned over to you.

There are no known risks from being in this study. Taking part in the research is completely voluntary.

I appreciate your participation in this research. If you have any questions about the research study itself, please contact me.

Thank you.

Sincerely

Lungile G. Seyama

Appendix 2 Letter of consent for the Disability Unit Coordinator

Dear Participant

I am a Masters student at the University of KwaZulu-Natal (UKZN) investigating the information seeking behavior of visually impaired students on the Pietermaritzburg (PMB) campus of the university.

I am inviting you to participate in the research because of the valuable contribution you can make in terms of determining whether the services that are provided by university, meet the visually impaired students' information needs or not, and to identify barriers that they come across as they seek for information.

If you agree to participate I would like you to complete the enclosed questionnaire which will be collected after five days. I commit myself to keeping the information you provide confidential. You have the right to withdraw at any point of the study, for any reason, and without any prejudice, and the information collected will be turned over to you.

There are no known risks from being in this study. Taking part in the research is completely voluntary.

I appreciate your participation in this research. If you have any questions about the research study itself, please contact me.

Thank you.

Sincerely

Lungile G. Seyama.

Appendix 3 Letter of consent for visually impaired students

Dear Participant

I am a Masters student at the University of KwaZulu-Natal (UKZN) investigating the information seeking behavior of visually impaired students on the Pietermaritzburg (PMB) campus of the university.

I am inviting you to participate in the research because of the valuable contribution you can make in terms of determining whether the services that are provided by the university meet your information needs or not, and to identify barriers that you come across as you seek information.

If you agree to participate I would like you to complete the enclosed form and leave it at the Disability Unit for collection.

I commit myself to keeping the information you provide confidential. You have the right to withdraw at any point of the study, for any reason, and without any prejudice, and the information collected will be turned over to you. There are no known risks from being in this study. Taking part in the research is completely voluntary.

I appreciate your participation in this research. If you have any questions about the research study itself, please contact me.

Thank you.

Sincerely

Lungile G. Seyama.

Your Name :

Address :

Telephone :

Best time to call :

[] Yes, I want to participate. Please call me to set up interview.

[] I am not sure if I want to participate. Please call to give more information.

[] No, I do not want to participate for the following reasons:

Appendix 4 Interview schedule for the visually impaired students.

1. Gender: Male
 Female

2. How old are you?-----

3. What is your level of study?
 Undergraduate;
 Postgraduate.

4. Which category are you?
 Full time student
 Part time student

5. Are you staying off campus or staying at university residence?

6. Please describe an instance where you had a need to find information at UKZN.

7. What format of information did you need?

8. Was that situation

Related to an academic issue?
 Related to personal matters?
 None of the above (please elaborate)

9. Please explain how you go about meeting your information need or solving a problem.

10. What information sources do you consult at UKZN?

11. Which information format is preferable? i.e. print, electronic, face-to-face, audio etc.

12. Was the information obtained useful? Yes
 No

13. If the information obtained was not useful, why was that the case?

14. Are you aware of the services that are provided by the Disability Unit?

Yes No

15. If yes, how did you get to know about those services?

16. Among the services that are provided by the Disability Unit, which ones are of use to you?

17. Which ones are not useful/ helpful to you? (please explain)

18. What are the barriers to the use of the services that are provided by the UKZN-PMB?

19. Is there a way that services for visually impaired students can be improved at the UKZN-PMB?

20. Are there any other resources that are not at the campus that you are aware of which may assist visually impaired students?

21. Any other comments?

Thank you very much for your time.

Appendix 5

Case No.....

Subject Librarians' questionnaire.

I am a student at the University of KwaZulu-Natal Pietermaritzburg (UKZN, PMB) studying towards a Masters in Information Studies. The purpose of the research is to determine whether the services that are provided by the UKZN, PMB meet the information needs of students with visual impairments and to establish their information seeking and use. Some of these relate to services provided by the library, hence the questionnaire below. The research is important in that it will assist to identify barriers that students with visual impairments face as they go about seeking information and how services that are provided for them can be improved. Please answer all questions as honestly as possible. The questionnaire is anonymous and all responses shall be treated with strict confidentiality.

Instructions for completing the questionnaire.

- a) Unless otherwise instructed, please tick in the space provided or fill where necessary the answer applicable to you.
- b) Use the space provided to answer all questions applicable to you.

1. Gender Male
 Female

2. Age.....

3. How long have you worked for this library?-----

4. How often do you assist students with visual impairments?

- Very often
 Often
 Sometimes
 Rarely
 Not at all

5. What sources of information do visually impaired students use the most in the library?

- Print
 Electronic
 Face-to-face
 Other, please specify

6. In your opinion, why is that?

7. What in your opinion prevents students with visual impairments from accessing services the library offers?

8. Are there any specialised services provided by the library for visually impaired students? Yes No

9. If yes, what are they?

10. If not, why?

11. Are there any initiatives in the place regarding services in library for students with visual impairments?

12. In your opinion are visually impaired students satisfied with the services the library offers? Please elaborate.

13. If you were asked to make recommendations about the services the library offers for visually impaired students, what would you say?

14. Any other comments? Please elaborate.

Thank you very much for your participation.

Appendix 6

Case No.....

Questionnaire for the Disability Unit Coordinator

I am a student at the University of KwaZulu-Natal Pietermaritzburg (UKZN, PMB) studying towards a Masters in Information Studies. The purpose of the research is to determine whether the services that are provided by the UKZN, PMB meet the information needs of visually impaired students. The research is important in that it will assist to identify barriers that visually impaired students face as they go about seeking for information and how services that are provided for them can be improved. Please answer all questions as honestly as possible. The questionnaire is anonymous and all responses shall be treated with strict confidentiality.

Instructions for completing the questionnaire.

- c) Unless otherwise instructed, please tick in the space provided or fill where necessary the answer applicable to you.
- d) Use the space provided to answer all questions applicable to you.

1. How long have you been working for the disability unit?-----

2. What services are provided by the unit for the visually impaired students?

3. Are the students aware of such services?

- Yes
- No

4. If they are aware of them, please explain how you make them aware.

5. Which services are mostly utilised?

6. If there are, in your opinion why?

7. Which services are under-utilised?

8. For the services that are under-utilised, in your own view why is that the case?

9. What would you say is/are barrier(s) in the provision of services to visually impaired students?

10. What initiatives are there regarding information services for visually impaired students?

11. Any other comments? Please elaborate.

Thank you very much for your participation.

Appendix 7

>>> Lungile Seyama 2008/12/04 10:22 AM >>>

Dear Nora,

I am a student at the University of KwaZulu-Natal Pietermaritzburg (UKZN-PMB) studying towards a Masters in Information Studies. I am conducting a research on information seeking behaviour of visually impaired students. The purpose of the research is to determine whether the services that are provided by the UKZN meet the information needs of students with visual impairments and to establish their information seeking and use. Some of these relate to services provided by the library.

The study identified a number of indicators that point to challenges faced by the visually impaired students in accessing information services that are provided by the library and I have made my recommendations that would help address the barriers.

I have been reliably told (by my supervisors Prof. Christine Stilwell and Craig Morris) that there is a University Library Committee that at some point in time discussed issues around the barriers faced by students with disabilities in accessing library services, and the committee drew a plan on how to deal with the barriers. I am therefore kindly requesting you to furnish me, if possible, with the plan or any information pertaining to that such as whether such issues were indeed discussed and how far are you with the implementation of such measures. This information will help complete the picture of my findings.

Thanking you in advance for considering my request.

Kind regards.

Lungile G. Seyama.