

Knowledge and skills requirements of National University of Lesotho librarians
in meeting information needs of humanities undergraduate students in the
digital age

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A minor dissertation submitted in *partial fulfilment* of the requirements for
the award of the degree of Master of Library and Information Studies

Faculty of the Humanities

University of Cape Town

2016

Compulsory declaration

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Dedication

*Dedicated to the Blessed Virgin Mary (Mother of God), my husband (Katiso Nkuebe),
daughter (Ntoetse Nkuebe) and son (Tumisang Nkuebe)*

Acknowledgements

I would like to express my sincere gratitude to the Almighty God for giving me life, protection and strength to start and complete this study. Indeed, his mercy endures forever.

I run short of words that could appropriately express my gratitude to my supervisor, Associate Professor Jaya Raju. Prof., your guidance, commitment, prompt feedback, frequent follow-up on my progress, early morning and late night calls, and instilling confidence in me when I felt like giving up, are all very much appreciated. I would not have completed this study timeously had it not been of your enthusiasm about my work. Not only did you think supervising me was enough, but you also nominated me for an NRF grant-holder bursary, which supported this study especially during data collection. I am humbled by the support I received from you.

My heartfelt thanks go to my husband, Katiso, who has been doing extensive parenting duties for our children, Ntoetse and Tumisang, while I was away from home for so many years. Also, a special thank you to my children for being supportive and understanding.

I extend a special gratitude to Amina Adams and Glynnis Johnson for always sparing their limited time, even during busy schedules, to look through my work and to assist with editorial issues. I greatly appreciate it.

Ngoni Mhonde and Dorah Kobela Malesela, your expertise, effort and assistance with data analysis are greatly appreciated.

To my friends and colleagues, Maki Lefalatsa, Rosemary, Stella and Nekulu, thank you so much for your love but most importantly for your contribution via the forum you created specifically to discuss research matters.

To my parents, brothers and sisters (for their prayers), closest friends and everyone who contributed in one way or the other to make this study a success – my heartfelt thanks go to you.

I would like to specifically acknowledge Dr Connie Bitso for being my mentor since I joined the LIS profession. You have always been holding my hand and guiding me throughout. I

would not have been where I am today had you not put so much effort in my career and self-development. I greatly appreciate this.

To the Library and Information Studies Centre staff - I am grateful for all their administrative and academic support.

A special thank you to my employer, Lerotholi Polytechnic, for granting me three years study leave.

This study would not have been a success had it not been of the financial support from the Lesotho Government through the department for loan bursaries – Lesotho National Manpower Development Secretariat. I also wish to acknowledge the National Research Foundation (NRF), South Africa for supporting this master's study at the University of Cape Town.

I would also like to express my appreciation to the National University of Lesotho for allowing me to use the institution to collect data and for making this study possible. I specifically would like to thank the Faculty of Humanities administrative staff, lecturers and students for working hand-in-hand with me to administer the study's questionnaire.

My gratitude to the National University of Lesotho librarians for the time they spared to be interviewed to make this study a success.

Last but not least, I convey my immense gratitude to Niel Mostert for always asking about my progress; his words of encouragement kept me going. A thank you to the University of Cape Town main library circulation desk staff for their support.

Abstract

This study attempted to ascertain what knowledge and skills are required for NUL librarians to meet the information needs of humanities undergraduate students in the digital era academic library environment. To address the objective of this study, the following research questions were generated: what are the library related information needs of NUL humanities undergraduate students in the current digital age?; what knowledge and skills are required of NUL librarians in meeting the library related information needs of humanities undergraduate students in the current digital age?; to what extent has technology affected the roles and functions of NUL academic librarians?; to what extent are NUL librarians readily adapting to and embracing technological changes affecting academic library resources and services?; and, what type of education and training are required for NUL librarians to effectively meet the information needs of humanities undergraduate students in the digital age academic library environment? The study was supported by organizational learning theory. It employed a convergent parallel mixed methods approach within a pragmativist paradigm for the collection of both quantitative and qualitative data to respond to the research questions guiding the study. A case study design was adopted in identifying humanities undergraduate students' information needs and concurrently ascertaining knowledge and skills requirements of NUL librarians. The target population included NUL librarians and humanities undergraduate students. Non-probability purposive sampling was employed to collect qualitative data (from the librarians) whilst probability stratified random sampling was adopted to obtain quantitative data (from humanities undergraduate students). Data were collected via face-to-face semi-structured interviews with librarians and a structured questionnaire for students. In concluding, the study presents, inter alia, a blend of required disciplinary, generic and personal competencies for NUL librarians to meet the library related information needs of humanities undergraduate students in the current digital age. It recommends, inter alia, the adoption of effective organizational learning to build on NUL librarian's existing knowledge and skills so that they may more easily adapt to rapidly evolving technology and more fully meet the information needs of humanities undergraduate students.

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List of acronyms and abbreviations

ACRL	Association of College and Research Libraries
AREMDOD	Archives, Records Management, Museum and Documentation Division (National University of Lesotho Library)
BA	Bachelor of Arts
CAES	Client, Access and Extension Services (National University of Lesotho Library)
DLIS	Diploma in Library and Information Studies
ICTs	information and communication technologies
IEMS	Institute of Extra-Mural Studies (National University of Lesotho)
IT	information technology
LIS	library and information services
LIS	Library and Information Science/Studies
LISC	Library and Information Studies Centre (University of Cape Town)
MICS	monitoring information and control systems
MLIS	Master of Library and Information Studies
NUL	National University of Lesotho
UBBS	University of Basutoland, Bechuanaland Protectorate and Swaziland
UCT	University of Cape Town
USA	United States of America

Chapter 1: Introduction and background to the study

1.1 Introduction

The library and information services (LIS) profession has been changing rapidly due to technological advancements, globalization and digitization of information. These developments have led to computerization of library processes and services, Web 2.0, Library 2.0, digital and virtual libraries as well as online learning (Emiri, 2015: 153). Technology has transformed higher education (Ogunsola, 2011) and this has affected the roles of academic libraries as well. Academic librarians are being put under pressure since they need to embrace and adapt to these changes in order to meet users' needs. In agreeing, Okonedo et al. (2014: 205) assert that academic libraries should adopt and integrate information and communication technology (ICT) into their roles and services in order to maintain more "vibrant information resources and services".

According to Raju (2014: 163) the 'dramatic' changes effected by technology in the traditional academic library have greatly impacted on the knowledge and skills of LIS professionals working in the digital environment. New demands have emerged, and hence a need for a highly skilled workforce and adoption of skills and competencies to meet the needs of users (Gerolimos & Konsta, 2008: 691; Smith, Hurd & Schmidt, 2013: 14). In fact because of the changing skills requirements, librarians, according to Mathews and Pardue (2009: 257), are tending to look more like information technology (IT) specialists. Libraries are 'crafting' new job roles and responsibilities that require new skills sets and mind sets. Technology has changed librarians' roles and influenced the way services and collections of academic libraries are used, and hence the reinvention of more traditional posts and the creation of new job roles by academic libraries (Goetsch, 2008: 157).

The changing information landscape has led to complex information needs requiring librarians to become as 'savvy' as the patrons they serve (Cooke, 2012: 1). Harvey and Higgins (2003: 154), in concurring with Cooke, point out that the LIS profession is compound, shifting and does "not speak with one voice about the attributes and skills it expects". Therefore, studies to identify and discuss the relevant knowledge, skills, attributes and competencies

required by LIS professionals in the digital library environment, become necessary (Partridge et al., 2010: 265).

Several studies on the LIS job market, and LIS education and training have been conducted globally to identify the relevant knowledge and skills competencies required in digital academic libraries. Some of these studies have been done in the African continent and include studies in the African university libraries context by Chiware (2007), in Kenya (Kavulya, 2007), in Nigeria (Ezema, Ugwuanyi & Ugwu, 2014; Emiri, 2015), in South Africa (Fourie, 2004; Ocholla & Shongwe, 2013; Raju, 2014) and in Sudan (Magara, 2010). The findings of these studies reveal that personal skills, generic skills and discipline-specific knowledge are generally the three major categories of knowledge and skills requirements for the digital age academic library. Skills such as interpersonal, communication, adaptive, leadership, information technology and many others fall within these three broad categories.

The findings of the above African context studies further indicate that education and training are critical for acquisition of required knowledge and skills by LIS professionals. Therefore LIS (Library and Information Science/Studies) schools should regularly review and revise curricula in order “to meet the challenges of the new knowledge and skill requirements of the digital age academic library” (Raju, 2014: 169). Mathews and Pardue (2009: 251) emphasize that curricula should prepare librarians to adapt to technology and embrace the digital age. In encouraging adaptation to change, O’Connor and Sidorko (2010: 13) cite Barack Obama: “you can’t stop change from coming...you can only usher it in and work out the terms, if you’re smart and a little lucky, you can make it your friend”. Change is inevitable and should be adapted to rather than rejected – and this is particularly relevant to academic libraries, that of the National University of Lesotho being no exception.

The literature indicates that LIS training is needed to address the challenges brought by technological changes in academic libraries. Wood (2007: 23) emphasizes that staff of a learning organization, such as an academic library, should possess required knowledge and skills to deliver essential services for organizational growth. He further indicates that effective training and development address deficiencies and performance gaps in the workplace. The gaps in knowledge and skills lead to training because it defines the required competencies to

deliver satisfactory services (Wood, 2007: 23). Evolving technologies have ushered changes in the traditional academic library environment and this has in turn created gaps in LIS professionals' skills sets. Hence the significance of training and up-skilling in order for academic libraries, such as that of the National University of Lesotho, to remain relevant in the digital age.

1.2 Background to the study

The National University of Lesotho (NUL) is a higher institution of learning in Roma, Lesotho. Lesotho is an independent country located in southern Africa and is completely landlocked by the Republic of South Africa. It is a small, mountainous country that covers an area of 30,355 square kilometres, about the size of Belgium (Zijlma, 2016). Lesotho is divided into ten administrative districts with a population of approximately two million inhabitants (Pefole, 2004). About three-fourths of the people live in rural areas (Central Intelligence Agency, 2016). The official languages are Sesotho and English though there are also Xhosa and Zulu speakers (Zijlma, 2016). With regard to its economy, Lesotho depends on textile manufacturing and subsistence agriculture. Its diamond mining has grown in recent years. The South African government also pays royalties for water transferred to South Africa from Lesotho. However, Lesotho relies on South Africa for much of its economy as 90 percent of goods are imported from South Africa (Central Intelligence Agency, 2016).

NUL was established in 1945 as a catholic university college and was replaced by the independent, non-denominational University of Basutoland, Bechuanaland Protectorate and Swaziland (UBBS) in 1964. The university has seen many name changes over the years until in 1975 when the name changed to the present National University of Lesotho. Currently the university comprises of seven faculties that offer both postgraduate and undergraduate programmes. The total number of students that enrolled for the academic year 2015/2016 is 9,544. There are 9,367 undergraduates and 177 postgraduates (National University of Lesotho, 2016). The Faculty of Humanities, which is the focus of this study, has eight academic departments with 55 academic staff and three non-academic staff, and a total student number of 1,016; that is, 998 undergraduates and 18 postgraduates (National University of

Lesotho, 2016). NUL has a library named the Thomas Mofolo Library, located on the main campus in Roma.

1.2.1 The National University of Lesotho Library

The NUL Library was established in 1954 as a college library. It became a ‘fully-fledged’ university library in 1964 when it was named after Thomas Mofolo (a Mosotho¹ author, who wrote mostly in the Sesotho language). The NUL Library comprises of the main library; the law library; the Archives, Records Management, Museum and Documentation Division (AREMDOD), all on the Roma campus; and, a branch library at the Institute of Extra-Mural Studies (IEMS) in Maseru, which is the capital of Lesotho. This branch library provides services primarily to part-time students and lecturers (National University of Lesotho, 2016).

The library had only two qualified (professional) librarians at the time it began as a university library in 1954. It now has 39 staff members, including professional and support staff (National University of Lesotho, 2016). However, this may not be considered significant growth when seen in the context of the number of decades since its establishment (National University of Lesotho, 2006: 3). The library had been operating manually since its inception. Library automation only began in 1989 “when the university librarian returned from America where she spent a year learning about computers and computerization of libraries” (National University of Lesotho, 2006: 3). Automation was delayed by the library’s inability to attract suitable staff. The automation project only “accelerated” in 1994 when the library began to find qualified people to automate it (National University of Lesotho, 2006: 3).

According to the National University of Lesotho (2006: 5) the quality of NUL Library services is not only located in the number of employees but also in the quality of individual staff members and most importantly, in their professional qualifications and personal qualities applied when executing their duties. Technological changes have no doubt impacted on the knowledge and skills requirements of academic librarians in this academic library as well. Hence, the importance of this study as it would assist in ascertaining the impact of such technology changes on the knowledge and skills competencies of NUL librarians.

¹ Mosotho means a citizen of Lesotho (plural Basotho) (Merriam-Webster, 2015).

1.3 Research problem

The changing academic library landscape, driven largely by rapidly evolving information and communication technologies (ICTs), has led to librarians adapting to changes in order to meet users' needs. The digital library has changed the "library brand" as "Libraries are no longer about books or even information. Instead, libraries are about facilitating people to participate, interact and create, to provide the means for that to happen" (Partridge, Lee & Munro 2010: 316). Rapidly evolving technologies have changed academic librarians' job descriptions as their roles and functions have changed (Goetsch, 2008: 157; Oguniola, 2011). However, Fourie (2004: 62) cautioned that while librarians might be aware of their competency deficiencies in this fast changing digital information environment, they might be incapable of repositioning themselves in time for the service to meet users' needs.

At about the same time, Weech (2005: 1) observed that, "we do not know much about what skills are needed for professionals who work as digital librarians". This statement, although somewhat dated, is nevertheless still an indication that fast evolving technology makes it complex for LIS professionals to readily identify 'required' skills and competencies appropriate for the digital academic library environment. Itsekor and James (2012: 11), more recently, undertook a study in Nigeria to ascertain the "digital literacy skills" of academic librarians and found that they lack appropriate skills to use computers which became a challenge for them to provide, maintain and manage the influx of digital information resources. Itsekor and James (2012: 11) also indicated that academic librarians in their study were "not encouraged to develop themselves", thus signalling another major challenge of change in organizations.

The digital academic library will always require a new type of professional with 'better' knowledge, skills and who is 'broadly educated' (Partridge et al., 2010: 265). This becomes a problem in developing countries like Lesotho where most academic libraries are very understaffed and majority of staff members are not qualified librarians (that is, they do not possess a professional LIS qualification). The researcher makes this assertion based on her own experience as she is a Lesotho national with experience of NUL and its academic library having used the library and interacted with its library staff.

The literature is clear that academic libraries all over the world are encountering challenges with regard to changes brought by rapidly evolving ICTs (Fourie, 2004: 62; Goetsch, 2008: 157; Ogunsola, 2011). The NUL Library would be no exception, the situation being aggravated by its developing African context. Therefore this study, using a humanities undergraduate context, seeks to address the issue of the knowledge and skills requirements of NUL librarians in this technology-driven, rapidly evolving academic library landscape. The study also seeks to address related issues of how NUL librarians are adapting to this changing environment, and the type of education and training needed for this environment.

Importantly, Lynch and Smith (2001: 409) stress that it is critical for an academic library to assess how the change in knowledge and skills requirements is reflected in its organizational structure and design. Hence change that ICTs bring to knowledge and skills requirements in the NUL Library should be reflected in its organizational structure and design. Hence organizational learning theory (Argyris & Schon, 1978), according to which organizations should engage in knowledge transfer in order to adapt to changes impacted by rapidly evolving technology, is used to inform this study and is reflected in the study's objective and research questions addressing this objective.

1.4 Research objective

The main objective of this study was to ascertain what knowledge and skills are required for NUL librarians to meet the information needs of humanities undergraduate students in the digital era academic library environment.

1.5 Research questions

In order to address the study's objective, the following research questions were generated:

- 1.5.1 What are the library related information needs of NUL humanities undergraduate students in the current digital age?
- 1.5.2 What knowledge and skills are required of NUL librarians in meeting the library related information needs of humanities undergraduate students in the current digital age?

- 1.5.3 To what extent has technology affected the roles and functions of NUL academic librarians?
- 1.5.4 To what extent are NUL librarians readily adapting to and embracing technological changes affecting academic library resources and services?
- 1.5.5 What type of education and training are required for NUL librarians to effectively meet the information needs of humanities undergraduate students in the digital age academic library environment?

1.6 Significance of the study

Studies on skills and competencies required for the digital age academic library environment have been conducted by a number of authors (Bawden, Vilar & Zabukovec, 2005; Orme, 2008; Choi & Rasmussen, 2009; Makori, 2009; Partridge et al., 2010; Blakiston, 2011; Nonthacumjane, 2011; Ocholla & Shongwe, 2013; Ezema, Ugwuanyi & Ugwu, 2014; Raju, 2014; Emiri, 2015). However, it is evident from the literature that most studies have been done in global North countries such as Australia and the United States of America (USA) with only a few having been conducted in Africa. A thorough literature search (using *Emerald*, *Science Direct*, *Ebscohost*, *ProQuest*, *Google Scholar* among other databases, institutional repositories, Google search engines and printed materials) has not revealed studies of this nature about Lesotho. Hence the need for a study to ascertain the knowledge and skills requirements of NUL librarians in the digital era.

It is hoped that this research would build upon the existing body of knowledge on the competencies required of academic librarians in the digital age, especially in the developing context. This study could also contribute to awareness among NUL administrators and library management as well as NUL LIS professionals of the impact of rapidly evolving ICTs on library resources and services, and of the need to embrace these changes for more effective service delivery to NUL's user communities. LIS educators too would benefit from such a study for purposes of curriculum review and revision to produce graduates with appropriate knowledge and skills to meet the information needs of users of the modern academic library.

1.7 Definitions of relevant terms

This section provides definitions of key concepts that form basis of this study. These terms are drawn from the research topic, and their explanations are provided in the context of this study.

1.7.1 Academic library

An academic library refers to a library “that is an integral part of a college, university, or other institution of post-secondary education, administered to meet the information and research needs of its students, faculty, and staff” (Reitz, 2002: 5). According to Okonedo et al. (2014: 205) academic libraries are the “heart” of universities for they have long been considered as an “indispensable companion” to higher education. Academic libraries are established to support teaching, learning and research in their parent institutions.

1.7.2 Digital age

The digital age, in the context of this study, refers to an era where information management services such as organization, management, retrieval, and transfer of information are done primarily by using computers and other technology devices. In this era, contemporary technologies such as social media, the internet and other technology tools have become the driving forces in the dissemination and communication of information (Schmidt & Cohen, 2013: 4). Transfer and sharing of information in the digital age is fast and cost effective (Brown, 2002: 20). However, the digital age requires people who are skilled in navigating a technology-driven and fast changing information landscape (Nonthacumjane, 2011: 286).

1.7.3 Knowledge

Knowledge refers to theoretical understanding of information; it is embedded in one’s mind, organizational practices or in documents (Knowledge Management Tools, 2015). While the terms ‘knowledge’ and ‘skills’ are sometimes used interchangeably, ‘knowledge’ refers to theory stored in one’s mind whereas ‘skills’ refers to the ability to apply that knowledge appropriately and to obtain expected results (Chartered Institute of Personnel and Development, 2006: 28). HR Bartender (2016) clarifies that having knowledge about something does not necessarily mean having skills or knowing how to use it. For instance, an

information specialist who has knowledge about digital curation does not necessarily mean that she or he is a skilled digital curator. It means he/she knows the subject. It is in this context that the concepts of knowledge and skills are used in this study.

1.7.4 Skills

Skills are defined as “discrete observable behaviours that contribute to the successful achievement of tasks” (Chartered Institute of Personnel and Development, 2006: 28). For the purpose of this study, skills refer to the ability to use and successfully apply theory into practice and get expected results. They are developed either through training or experience. They are usually learned and developed through knowledge transfer (HR Bartender, 2016). Skills can be measured, assessed and rated from poor to excellent depending on the ability of the possessor (Chartered Institute of Personnel and Development, 2006: 28).

1.7.5 Personal attributes

Personal skills are defined as “appropriate attitudes, values and personal traits” (Nonthacumjane (2011: 283). In the context of this study, personal attributes are regarded as behavioural or personal aptitudes, such as being analytical, patient, creative, flexible, adaptable, enthusiastic and confident, which information professionals should possess in order to deal with a variety of users and be responsive to their 21st Century information needs. Therefore, personal traits are essential requirements in the LIS job market.

1.7.6 Competencies

Competencies are regarded as a “combination of skills, knowledge, and behaviours important for organizational success, personal performance and career development” (Wood, 2007: 1). Hence, for the purposes of this study the term ‘competencies’ is used to generically refer to knowledge and skills as well as personal attributes required by LIS professionals to effectively and efficiently deliver academic library services in the digital environment.

1.7.7 Information needs

Information is crucial and needed in all spheres of life and as a result it should be accessed for the user of that information to become knowledgeable. According to Prasad (2000: 8) a need for information is a ‘factual situation’ which information providers must be aware of in order

to gratify it. In short, information need means that there is a gap in knowledge that requires information in order for the gap to be filled. In the context of this study, an academic library attempts to meet the information needs of users such as students, academics and researchers for their academic and scholarly pursuits.

1.8 Overview of research methodology

This study employs a convergent parallel mixed methods (Creswell, 2014: 15) research approach, using both quantitative and qualitative data collection methods. The pragmatist paradigm was suitable for this study as it allowed the researcher to use both qualitative and quantitative philosophical assumptions in order to understand the experiences and 'make sense' of the NUL Library context. A case study design was adopted with the NUL Library being the case identified for study. Data was collected via use of a structured questionnaire for probability sampled students and face-to-face semi-structured interviews for purposively sampled NUL librarians. Pre-testing of the instruments was done to ensure lack of ambiguity in the design of items and for overall optimal data collection. Both the consent forms and the questionnaires were 'hand delivered' to participants and completed consent forms and questionnaires were physically collected to ensure and secure maximum return. Data analysis was done 'by hand' and the results were tabulated according to frequency distributions, using *Microsoft Excel*. The discussion, conclusions drawn and recommendations made are based on the main findings of the study.

1.9 Delimitations of the study

According to Simon (2011: 2) delimitations of the study are characteristics, in control of the researcher, which delineate the boundaries of the study. Due to the smallness of this study (a minor dissertation), it was limited to NUL librarians and humanities undergraduate students in Roma, Lesotho. It did not include other campuses of NUL (that is, the Institute of Extra-Mural Studies (IEMS) located in Maseru, Mochale'sHoek and Leribe districts – for logistical reasons relating to distance). This study focused on the Thomas Mofolo (NUL main library) only.

1.10 Limitations of the study

Limitations refer to “potential weaknesses” in a study; as opposed to delimitations, limitations are beyond the researcher’s control (Simon, 2011: 2). The most common limitation of case studies is that they provide little basis for scientific generalization as their aim is to generalize theories (Yin, 2014: 4). In view of the focus of the study on a single institution (NUL) as well as on its main library only, the findings of this research will not be generalizable to other pedagogical institutions. However, it is hoped that the findings would nevertheless be useful in revealing trends on the knowledge and skills requirements of librarians in the digital age, in institutions similar to NUL, especially in the developing context.

1.11 Structure of the research report

This research project is structured into five chapters. Chapter One addresses the introduction and background to the study, which dwells on the knowledge and skills requirements in digital academic libraries and the problem of evolving ICTs at the NUL Library, that require librarians to adapt to changes in order to meet users’ needs. Further, it presents the main objective of the study which was to ascertain the knowledge and skills requirements of NUL librarians in the digital era. It also outlines the study’s research questions, significance of the study, definitions of relevant terms, overview of research methodology, and limitations and delimitations of the study.

Chapter Two discusses the organizational learning theory supporting this study and presents a literature review pertinent to it. The literature review dwells on the knowledge and skills required for LIS professionals practising in the digital academic library environment.

Chapter Three outlines the mixed methods methodological approach of this study. It also discusses the case study design, population of the study and sampling of NUL librarians and humanities undergraduate students for data collection purposes. Data analysis ‘by hand’, validity and reliability and ethical considerations are also explained in this chapter.

Chapter Four focuses on the presentation of findings based on the analysis of data collected, both qualitatively and quantitatively, on the knowledge and skills required of NUL librarians in the digital age, their readiness in accepting and adapting to technological changes affecting

their roles and functions, as well as the type of education and training required of NUL librarians to meet the information needs of humanities undergraduate students.

Chapter Five provides a discussion of the main findings in the context of the study's research questions, the organizational learning theory supporting the study and the literature reviewed for the study. Based on this discussion, conclusions are drawn and recommendations are made. The research report ends with a reference list and necessary appendices.

1.12 Summary

The basis of this study is set out in this chapter. It covers the fundamental aspects of this report as it provides a background to the study as well as that of the NUL Library, which serves as the study's research site. It articulates the research problem of evolving ICTs that require librarians to adapt to changes. The research objective and research questions for the study are also set out in this chapter. The main justification of this study, which is to build upon the existing body of knowledge on the competencies required of academic librarians in the digital age, is expounded. Definitions of terms relevant to this study are provided, the research methodology is outlined, limitations and delimitations of the study are specified, and structure of the research report is explained. The next chapter discusses the theory supporting the study and presents a review of relevant literature.

Chapter 2: Literature review

2.1 Introduction

A literature review is a “synthesis of the literature on a topic” (Pan, 2008: 1) which is created through different and sometimes contradicting ideas. A literature review allows one to “look again” (re + review) at the work other people have done in similar areas (Leedy & Ormond 2010: 66). In concurring, Creswell (2014: 27; 28) indicates that a literature review achieves numerous purposes, which include sharing results of other studies similar to the one being executed, relating this study to a continuing dialogue in the literature as well as providing a framework for comparing the results of the current study with that of other studies. Thus, a literature review presents to the researcher the appropriate theory to guide, frame or inform a study.

A review of literature aided this study to find out how much is already known in the identified research area, what research methodologies had been used before and to build on what others had already done in addressing the research questions generated for this study. In support of this, Kumar (1996: 33) highlights that the literature review brings clarity and focus to the research problem, improves methodology and broadens the researcher’s knowledge base.

For this study, the literature review was fundamental since the supporting theory and organizational learning theorists such as Argyris and Schon (1978) were identified from similar studies by Wijnhoven (1995), Lippincott (2010) and Pietersen (2015). The reviewed literature shows that organizational learning theory centres around learning and knowledge transfer in order for organizations to adapt to a changing environment, make decisions and solve problems. As a result, the researcher found this theory suitable in supporting this study to ascertain knowledge and skills requirements of NUL librarians in the digital age; and also in addressing the problem of evolving ICTs at the NUL Library, which requires librarians to adapt to changes (and make decisions) in order to meet users’ needs. Argyris (1982: 4) in highlighting the importance of learning in organizations indicates that “organizations require,

as a minimum, employees who have the skills to produce a product or a service". Hence, the relevance of this theory for this study as acquisition of knowledge and skills requires learning.

While the first part of this chapter discusses organizational learning theory supporting this study, the second part deliberates on the identified themes on knowledge and skills requirements in the digital era academic library environment. Some of the key concepts identified in the literature include discipline-specific knowledge, generic skills and personal competencies. This chapter also reflects on the impact of evolving technology on LIS professionals' roles and functions and on how education and training in LIS and related fields could contribute to growing knowledge and skills to meet LIS workplace demands (Burnett, 2013: 1).

2.2 Theoretical support

The theoretical foundations of a discipline are a base around which research and development of a subject is focused for creating ideas (Bawden, 2008: 417). This study is supported by organizational learning theory. Organizational learning refers to a mechanism that detects and corrects errors in an organization to achieve its objectives (Argyris & Schon, 1978: 2). It is a tool employed by organizations to adapt to its external environment (Arias & Solana, 2013: 704). This indicates that adaptation to changes is critical for organizations' development. In concurring, Blakiston (2011: 729) states that individuals and organizations should comprehend and adapt to their constantly changing environments in order to succeed.

Schulz (2002: 416) points out that "notions of organizational learning gained prominence in the nineteen fifties when they were thrown into an on-going debate between behaviourists and economists". Economic models became dominant during and after the first world war but behaviourists such as March (1958), Simon (1958) and Cryert (1963) (as cited in Schulz, 2002: 416) 'attacked' the economic theory because "its models were overly simplistic and contradicted empirical evidence" (Schulz, 2002: 416). Organizational learning theory had since evolved as behavioural and cognitive phenomena dealing with organizational learning and adaptation for organizational survival (Foil & Lyles, 1985: 809; Schulz, 2002: 416). Argyris

and Schon (1978) and Fiol and Lyles (1985) are a mentioned few among the prominent names responsible for building this theory.

According to Arias and Solana (2013: 704) organizational learning involves two types of learning: single-loop learning which refers to “making things in a better way” and double-loop learning, meaning to create new things and “not just making the same old things better”. Wijnhoven (1995: 260) states that organizations learn in both ways: single-loop and double-loop, and advises that organizations should employ both to learn, as employing one only could lead to organizational ineffectiveness. Argyris (1976: 363) explains that in such a case, feedback is crucial in order to make a decision on the best leaning method to be employed by an organization to detect and correct errors. Argyris and Schon (1978: 9) highlight that the requirements for organizational learning are “not occasional, sporadic phenomenon, but continuous and endemic”.

Organizational learning theory is relevant to this study as it deliberates on changes, knowledge ransfer and adaptability to the external environment. This is evidenced by Marquardt’s (1996: 1) assertion that increasing technological changes have “dramatically altered the environment of the business world”, and only organizations that are willing to transform themselves will survive in the rapidly changing environment. This theory, adapted to a service context such as that of an academic library, is helpful in ascertaining to what extent technology has affected the roles and functions of NUL academic librarians (**Research Question 1.5.3**) and also to ascertain the readiness of NUL librarians in embracing technological changes affecting academic library resources and services (**Research Question 1.5.4**). According to Marquardt (1996: 1-2) transformed organizations enjoy “greater knowledge, flexibility, speed, power, and learning ability to better confront the shifting needs of a new environment, more demanding customers, and smarter knowledge workers”.

Wijnhoven (1995: 255) used organizational learning theory in a six-year part-time study he conducted in the Netherlands to understand and explain the impact of monitoring information and control systems (MICS) on organizational learning. The study revealed that organizational learning is a process that takes place in several ways, and learning needs are “the responses to the complexity and dynamics of the business environment” (Wijnhoven,

1995: 256). Hence, organizations need to adopt theories to determine the type of learning they need to effect change on their 'learning norms'. In his study of "the emergent information commons...", Beagle (2012: 533), also using organizational learning theory, concludes that the effectiveness and vital future of an organization are based on its adaptive organizational learning processes (in terms of structures, skills, processes and information flow).

Based on organizational learning theory, acquisition of knowledge and skills by LIS professionals to meet the evolving demands of the digital era academic library may be regarded as a way of adapting to changes from the external environment (rapidly evolving ICTS impacting on academic library resources and services as well as higher education teaching, learning and research which in turn affects delivery of academic library services to meet new user demands). As explained by Argyris and Schon (1978: 17), changes in the organization's environment may "trigger new patterns" which need to be responded to. In the case of this study, new patterns may be considered to be new ways of teaching, learning and researching in higher education prompted by technology which requires new knowledge and skills on the part of academic librarians to respond to new information needs on the part of their users. Argyris and Schon (1978: 10) highlight that professionals should be competent in accomplishing tasks whilst reflecting on the tasks to learn from them. As such, the theory of organizational learning is useful in supporting this study to ascertain the competency requirements and readiness of NUL librarians in responding and adapting to a technology-driven changing information environment (**see Research Question 1.5.3 and 1.5.4**).

According to organizational learning theory, an organization remains stable in a changing environment through engaging in some kind of learning (Argyris & Schon, 1978: 18). Therefore, both single and double-loop learning are useful tools for this study to identify the type of learning (education and training) NUL librarians would need to engage in, in order to meet the knowledge and skills requirements of the 21st century academic library (**see Research Questions 1.5.2 and 1.5.5**). Arias and Solana (2013: 705) point out that single-loop learning might not be adequate for an organization to adapt to its changing environment and

hence might also need double-loop learning. It would be useful to see if this is the case for the NUL Library as well.

Blakiston (2011: 730) asserts that unless organizations constantly adapt to the ever changing environment through “speedy, effective learning, they will die”. He further accentuates that libraries are already viewed as dying institutions because of advancements in the information environment and as a result, it is critical that library organizations “quickly become learning organizations to gain new skills, apply new knowledge, and adapt to new situations” (Blakiston, 2011: 729-730). In concurring, Schwandt and Marquardt (2000: 3) specify that organizations around the world should make significant transformation to adapt, survive and succeed in the new millennium. They also indicate that adaptation is achieved only through continuous learning and improving the capacity of organizations to deal with change or else organizations ‘will die’. An academic library, such as the NUL Library, should become a learning organization and embrace evolving technologies, adapt to changes and transfer knowledge in order to meet fast changing user demands (**see Research Question 1.5.1**), or else it ‘will die’. Hence the relevance of organizational learning theory to this study.

2.3 Literature review

Literature is reviewed according to themes relevant to the research questions guiding this study.

2.3.1 The academic library in the digital era

Information and communication technologies (ICTs) have changed the traditional academic library immensely thus affecting the knowledge and skills requirements for librarians operating in the digital environment (Raju, 2014: 163). In support, Patel (2012: 1) too claims that technology has changed the nature of academic libraries and the role they play. Academic libraries are moving towards “an information commons model of service, and becoming campus community centers” for they invite students and faculty socialization, learning, research, scholarship and instruction (Patel, 2012: 1).

The impact of digital technology (Campbell, 2006: 16) has brought about significant changes in the roles, competencies and skills of digital librarians (Myburgh & Tammaro, 2013: 15). Hence the need for academic libraries in the digital environment to embrace “digitization, electronic publishing, Web 2.0, Web 3.0, Library 2.0, Library 3.0, social media, open access, and a host of other fast evolving ICTs” (Raju, 2014: 164).

Higher education is changing and academic libraries support teaching and learning in this changing environment (Pietersen, 2015: 16); consequently, higher institutions of learning have to make “critically important practical and policy decisions about the function of libraries, about the space devoted to libraries, and about the roles of librarians” (Campbell, 2006: 30). It is undeniable that the academic library landscape is changing; hence the need for new knowledge and skills acquisition by LIS professionals in order to efficiently navigate the digital academic environment. An academic Library such as that of NUL, also needs to respond to this digital age changing higher education landscape that is prompting new knowledge and skills sets on the part of libraries to meet changing information needs of higher education user communities.

2.3.2 Information needs in digital academic libraries

The definition of information needs is “often vague or highly complex in nature” (Nicholas & Herman, 2009: 17). It is a “generic term” that hides more than it reveals (Faibisoff & Ely, 1974: 9). Nicholas and Herman (2009: 18) add that information needs arise when “people recognise a gap in their state of knowledge, that is, when they experience ‘an anomalous state of knowledge’ and wish to resolve that anomaly”. Information may also be required to formulate ideas or create new knowledge (Shenton & Dixon, 2004: 25). Cooke (2012: 1) opines that the expansion and change in librarianship with evolving technologies has led to various patron groups with more intricate information needs. Therefore, librarians should adapt to evolving needs of users (Patel, 2012: 1). Communication skills are critical as this skills set enables academic librarians to articulate and probe information needs of users as they (librarians) tend to become reluctant to keep in touch with patrons and end up not knowing them as they should (Nicholas & Herman, 2009: 8).

Today academic library users think about technology and information differently from previous generations, and expect instant access to information (Musangi 2015: 183). Because information needs are complex to define, users' expectations should be carefully handled. Majority of patrons rely on personal computers because they believe that "all information" that is always up-to-date is available and easily retrieved with Google-like searching (Bawden, Vilar & Zabukovec, 2005: 88). This study focuses on knowledge and skills competencies required by academic librarians to assist undergraduate students to identify when there is a gap in their knowledge and to meet their information needs to fill this gap.

2.3.3 Knowledge and skills requirements in the digital academic library

Studies on changing library competency requirements have been conducted globally in countries such as Australia (Missingham, 2006; Howard, 2010; Partridge et al., 2010; Haddow, 2012), China (O'Connor & Li, 2008), India (Patel, 2012; Sarasvathy, Nambratha & Giddaiah, 2012), Israel (Eshet-Alkalai, 2004; Bronstein, 2015), Kenya (Kavulya, 2007; Musangi, 2015), Malaysia (Hashim & Mokhtar, 2012), Nigeria (Ezema, Ugwuanyi & Ugwu, 2014; Emiri, 2015), Pakistan (Ansari, 2011), South Africa (Fourie, 2004; Ocholla & Shongwe, 2013; Raju, 2014), United Kingdom (Bawden, Vilar and Zabukovec, 2005; Orme, 2008), and the United States of America (Zhou, 1996; Lynch & Smith, 2001; Choi & Rasmussen, 2009; Blakiston, 2011; Nonthacumjane, 2011). These authors have found that information and communication technologies (ICTS) have substantially impacted on the knowledge and skills required for LIS professionals working, particularly, in the academic library digital environment.

According to the Association of College and Research Libraries (ACRL) (2006), librarians operating in the digital environment must possess competencies that "comprise a different mix of skills". Studies by Orme (2008: 630) in the United Kingdom and Haddow (2012: 244) in Australia found that a mixture of professional, generic and personal skills is a requirement for LIS professionals. In agreeing with the "mixture" of skills required, Choi and Rasmussen also found that "digital librarians must possess the necessary core knowledge and skills of a traditional profession as well as new technological knowledge and managerial skills" (2009: 465). They point out further that other generic skills such as communication, interpersonal,

teamwork and management skills are crucial especially for partnership and collaboration efforts.

Further, Nonthacumjane (2011: 286), in a content analysis of job advertisement study conducted in the United States of America, found that a new cohort of LIS professionals in the digital age should possess personal, generic and discipline-oriented skills as well as qualifications, to provide information. An exploratory study conducted by Raju (2014: 169) in South Africa using content analysis of job advertisements and interviews, too revealed that a “blend of discipline-specific knowledge, generic skills and personal competences” are required for LIS professionals working in digital era academic libraries. It is evident from the literature that different sets of skills, values, attitudes and competencies (Sreenivasulu, 2000: 16) are of utmost importance for the LIS professional working in the digital information environment.

2.3.3.1 Discipline-specific knowledge

Discipline-specific knowledge, also referred to as professional knowledge (Raju, 2016: 7), ‘content knowledge’ or ‘subject matter expertise’ (Partridge & Hallam, 2004: 3) and often inclusive of discipline-specific skills, is defined as “knowledge which is learned in the LIS programmes in both undergraduate and postgraduate levels” (Nonthacumjane, 2011: 284); and as a result an imperative for LIS employers (Raju, 2014: 165). For the purpose of maintaining consistency in this study, the terms discipline-specific knowledge (or skills) will be used in this research report. Metadata, content management, digital curation, digitization and preservation, user needs and collection development have been identified by Raju (2016: 7-8) as some of the essential discipline-specific knowledge for LIS professionals.

According to Raju (2014: 165) cataloguing and classification, which have existed since the inception of the discipline of Library and Information Science, are competencies still required in digital libraries for knowledge organization and retrieval. Patel (2012: 3) points out that even organized knowledge in databases requires an “information expert” such as a librarian to search and retrieve it. Thus, a librarian equipped with information searching skills is still indispensable in a world conquered by communal Internet access, to “efficiently find, select, check and make information available” (Patel, 2012: 3) for users’ needs. Choi and Rasmussen

(2009: 465) point out that core knowledge and skills of traditional librarianship are essential in the digital academic library environment but they need to be supplemented by new technological knowledge and managerial skills.

As a result of technological advancements, there are emerging trends such as digital curation, research data management and research librarianship, to mention but a few, that are challenging academic libraries in the digital era (Raju, 2014: 165). As such, professional skills are required in academic libraries to develop tools, portals and customize strategies for precision research on the massive web (Campbell, 2006: 21). Hence discipline-specific knowledge becomes a necessity in academic libraries, especially in research oriented ones. Professional knowledge in eResearch, data curation and preservation is essential in academic libraries today (Luce, 2008: 46; Davidson, 2014: 90) to support and contribute to the research data management landscape. It would seem that regardless of the new technologies that societies use to find information, LIS professionals would always be required to contribute using their professional knowledge.

Discipline-specific knowledge such as metadata, digital curation, database development and others have emerged as some of the essential knowledge and skills required in the digital academic library environment. Although, traditional skills such as cataloguing are still a requirement in a modern library, they have been impacted upon by evolving ICTs and have in turn evolved in the way this LIS professional function is carried out.

2.3.3.2 Generic skills

According to Orme (2008: 626) generic skills encompass personal, managerial, information technology and other profession related skills that allow people to work not only in disciplinary areas but also in other social situations (Raju, 2014: 165). Generic skills are also referred to as life skills, for example, communication and interpersonal skills, critical thinking, problem solving and teamwork (Raju, 2014: 165) or “transferrable skills” or “graduate attributes” (Partridge & Hallam, 2004: 3). Generic skills “complement the discipline specific skills and professional knowledge acquired by students through their university study” (Partridge & Hallam, 2004: 3), and are hence required in the rapidly changing academic library environment. It is critical for the success of libraries in the digital age to employ LIS

professionals who are “vibrant” and equipped with generic skills rather than just discipline-based skills (Missingham, 2006: 266).

General computing or computer literacy such as information literacy and technology skills are generic skills (Raju, 2014: 165) required to provide information services expected by users in the digital academic library environment. Haddow (2012: 246) too points out that “it is arguable that technology skills should be considered a generic skill” since information technology is “embedded in nearly all activities performed by academic reference librarians today”. In the context of this study, technology skills are considered as generic skills “embedded” in or augmenting discipline-specific knowledge to meet information needs of users in the digital age.

LIS professionals in Africa, where this study was conducted, require generic skills to cope with the rapid changes in the digital era (Chiwere, 2007: 3). In other words, LIS professionals require generic skills such as change and innovation management skills to embrace and adapt to change. Shibanda (2001: 2) emphasizes that Africa requires LIS professionals with a “vision of good leadership and excellent communication, presentation, interpersonal skills to steer Africa into the present and future era of computerization through guidance, advice and mentoring”. This means that generic skills are required to mediate the digital academic library not only in the African context but also in “understanding of the current state of global trends in digital library projects” Chiwere (2007: 3).

The literature suggests that although generic skills are very important in the digital information environment, they do not displace the professional skills – these are still valued in the LIS workplace (Sreenivasulu, 2000; Partridge & Hallam, 2004; Missingham, 2006; Orme, 2008; Nonthacumjane, 2011; Raju, 2014). This means that as much as generic skills are highly required in the digital academic libraries, they are not the core disciplinary skills but they do augment professional skills (Riley-Huff & Rholes, 2011: 138).

2.3.3.3 Personal competencies

Personal skills are defined by Nonthacumjane (2011: 283) as “appropriate attitudes, values and personal traits”. The literature reveals that librarians of the 21st century require a wide range of skills inclusive of behavioural or personal competencies (Sreenivasulu, 2000: 19; Shibanda 2001: 1; Missingham, 2006: 259; Knight, 2009: 55; Partridge et al., 2010: 265; Nonthacumjane, 2011: 283; Shongwe & Ocholla, 2012: 2; Ezema, Ugwuanyi & Ugwu, 2014: 17; Raju, 2014: 163). Contemporary LIS professionals require personal skills such as being creative, flexible, reflective, adaptable, detective-like, ability to deal with variety of users, responsive to peoples’ needs, enthusiastic and self-motivated (Nonthacumjane, 2011: 283).

Partridge, Lee and Munro (2010: 317) indicate that there are lists of core competencies being developed by the world’s LIS professionals that focus more on interpersonal competencies “tailored” uniquely for Librarian 2.0. The literature indicates that discipline-specific knowledge, generic skills and personal attributes are the core competencies required in the LIS profession. Hence a need for LIS professionals that are “multi-skilled” (Raju 2014: 165). The NUL Library too would need to display this multi-skilled feature in order for its librarians to mediate a technology-driven and rapidly evolving higher education information landscape.

In summary, while discipline-specific knowledge (and skills) seems relevant in the digital academic library, it needs to be supplemented with generic skills and personal competencies to meet the needs of users in the fast changing academic library landscape. Thus, the three categories of knowledge/skills (disciplinary, generic and personal) have emerged in the literature as job requirements in a digital age academic library. They are needed, *inter alia*, to adapt to technological changes affecting academic libraries such as the Thomas Mofolo Library which is the main library at the National University of Lesotho.

2.3.4 The changing roles and functions of academic librarians

The influence of ICTs on contemporary academic libraries and on the LIS profession has demanded the need for libraries to redefine their objectives and the roles of librarians within the digital environment (Satgoor, 2015: 44). Rapidly evolving ICTs have affected the roles and functions of librarians as they have given birth to Web 2.0, Library 2.0 and Librarian 2.0. Librarian 2.0 is regarded as “the guru of the information age” because of its knowledge,

impact and ability to steer the 'dynamic' information era (Partridge, Lee & Munro, 2010: 316). Partridge et al. (2010: 266) conclude that the role of libraries has not changed but the nature of services they provide has; especially in view of the new digital tools incorporated in academic libraries (Musangi, 2015: 183).

Shongwe and Ocholla (2012: 8) note that change in traditional LIS job titles and emergence of new titles such as e-resource or repository librarian, Web application librarians and library technology specialist (2012: 9) has been influenced by ICTs. They also highlight that some of the new skills are in line with Computer Science, Information Systems and Computer Engineering disciplines rather than with LIS. The need for new IT skills in academic libraries is evidenced by the emergence of digital repositories such as digital archives and institutional repositories to preserve and publish work in Web accessible databases (Zhou, 1996: 259; Campbell, 2006: 26). However, Harvey (2010: 26) advises that digital librarians must be prepared to combine the old methods and tools with the new ones and play multiple roles in this "big shift" (Shank & Bell, 2011: 108) from traditional, functional specialist roles to more "expansive and complex" ones (Lynch & Smith, 2001: 416).

Digital academic libraries offer virtual references services through social media as web-based chats, instant messaging and many other Web-based services to improve access and search utility (Campbell, 2006: 19; Patel, 2012: 1). Shank and Bell (2011: 106) postulate that the future of academic librarianship depends on the ability of libraries to incorporate their services into the curriculum and show significant impact on student learning such as developing online learning, modules, tutorials, short videos and screen casts to expand their programmes (Jaguszewski & Williams, 2013: 10). The roles and functions of academic libraries and librarians are likely to continue to shift in the dynamic digital information environment. Hence the need for knowledge and skills to mediate this shifting information landscape - the NUL Library is no exception to this scenario.

2.3.5 Knowledge and skills challenges for the LIS profession

The literature reflects that there are challenges facing the LIS profession with regard to knowledge and skills acquisition. Some of the challenges identified include: funding, rapid change, coping with change, shortage of skills, training and retention of skills, Internet

connectivity, ICT infrastructure and copyright matters (Xu, 1996: 13; Zhou, 1996: 260; Lynch & Smith, 2001: 418; Chiware, 2007: 1-2; Howard, 2010: 261; Ezema, Ugwuanyi & Ugwa, 2014: 17; Raju, 2014: 166). While it is evident from the literature that these challenges are global, Chiware (2007: 1), Ezema, Ugwuanyi and Ugwa (2014: 17) and Raju (2014: 166) affirm that in Africa, where this study is based, numerous challenges are faced by the digital academic library in terms of knowledge and skills required, including those mentioned at the beginning of this section. However, funding is identified as the main challenge to acquire modern skills (Ezema, Ugwuanyi & Ugwu, 2014: 17; Raju, 2015: 166).

Biswas (2009: 133) indicates that librarians are currently facing the challenge of “complicity” because of the latest trends in accessing information. This implies that as the information profession evolves, librarians too, need to change and acquire relevant skills to be as “technology savvy” as users. The question is whether LIS professionals are ready to adapt to change or not. Chiware (2007: 2) identified readiness to implement digital library services as yet another major challenge faced by digital academic libraries in Africa in terms of knowledge and skills. In addition, challenges such as lagging behind rapid changes, shortage of positions, few libraries being built, scarce LIS skills, shortage of LIS schools and the digital divide have an impact on the job opportunities for LIS professionals (Fisher, 2004: 6; Ocholla & Bothma, 2007; Burnett, 2013: 1; Ocholla & Shongwe, 2013: 42; Raju, 2015: 166).

Studies by Orme (2008), Partridge et al. (2010), Nonthacumjane (2011), Ezema, Ugwuanyi and Ugwa (2014) and Raju (2016) acknowledge that knowledge and skills competencies remain significant in the digital academic library environment. However, there are challenges, particularly in the developing world of which Africa is a part, facing LIS professionals with regard to acquisition of knowledge and skills to meet the evolving information needs and demand of users.

2.3.6 LIS education and training

The digital academic library environment requires LIS professionals with knowledge, skills and significant education, and hence the need for education and training as this could be a solution to challenges facing academic libraries and LIS professionals in the digital age. LIS education has been identified as an essential and valuable starting point (Riley-Huff & Rholes,

2011: 137) for LIS professionals to acquire knowledge and skills required in the LIS job market because educational qualifications are fundamental in the digital library environment (Igun, 2006: 2). Studies by Ocholla and Bothma (2007), Gerolimos and Konsta (2008: 695), Han and Hswe (2010), Shongwe and Ocholla (2012: 8) and Ocholla and Shongwe (2013: 39) affirm that the LIS job market globally requires both undergraduate (for example, Diploma, Bachelor Degree, etc.) and postgraduate (for example, Honours, Masters, PhD., etc.) qualifications in Information Science related fields. These qualifications are crucial in learning organizations to gain new skills, apply new knowledge, and adapt to new situations (Schwandt & Marquardt, 2000: 3).

LIS education and training are acquired through formal, informal, in-service training and continuing education programmes, which encompass on-the-job and off-the job training; with formal education delivered via short courses, lectures and seminars, and informal training via workshops, conferences and through individuals such as colleagues (Blakiston, 2011: 734; Ezema, Ugwuanyi & Ugwa, 2014: 22; Emiri, 2015: 159). Blakiston (2011: 734) further points out that librarians must have the desire to obtain new skills and knowledge through formal training with defined curricula and educational qualifications. However, Igun (2006: 2) argues that the formal education system produces professionals with “facts and theoretical knowledge but limited practical skills” thus making the point that theory alone, without practical skills, is insufficient in enhancing LIS professionals’ skills in the digital age. Hence, both single and double loop learning (that is, simple and complex learning or practice and theory – see Section 2.2) would be required in learning organizations to quickly adapt to change.

Formal LIS education should integrate into the curricula, “core competencies”, *inter alia*, such as general computing (ICTs included), digitization, communication, interpersonal skills and practical skills with digital collections (Sreenivasulu, 2000: 17; Missingham, 2006: 263; Chiware, 2007: 7; Choi & Rasmussen, 2009: 465; Nonthacumjane, 2011: 286; Ezema, Ugwuanyi & Ugwu, 2014: 23; Raju, 2016: 14). Education and training are inclusive of both formal education by LIS schools and continuing professional development in the workplace

to equip and constantly update librarians' skills and competencies to embrace and adapt to technological changes affecting the digital academic library environment.

2.4 Summary

This chapter discussed the theory supporting this study and presented a review of literature related to the study's research problem. It focused on organizational learning and its significance as a tool employed by organizations to adapt to a changing environment. It also reviewed literature on themes relating to information needs and knowledge and skills, focusing mostly on the three categories of competencies: discipline-specific knowledge (and skills), generic skills and personal attributes as the core competencies required by LIS professionals in the digital age academic library to meet users' evolving information needs. Further, it gleaned from the literature the challenges facing academic libraries, particularly in the African continent (as NUL is African based); their readiness in embracing change and the type of LIS education and training required for the LIS job market. The next chapter discusses the research design and methods employed by the study.

Chapter 3: Research methodology

3.1 Introduction

The objective of this study, as stated in Chapter One, is to ascertain what knowledge and skills are required for NUL librarians in meeting the information needs of humanities undergraduate students in the digital era academic library environment. To reiterate, the research questions generated to address this objective are as follows:

- What are the library related information needs of NUL humanities undergraduate students in the current digital age?
- What knowledge and skills are required of NUL librarians in meeting the library related information needs of humanities undergraduate students in the current digital age?
- To what extent has technology affected the roles and functions of NUL academic librarians?
- To what extent are NUL librarians readily adapting to and embracing technological changes affecting academic library resources and services?
- What type of education and training are required for NUL librarians to effectively meet the information needs of humanities undergraduate students in the digital age academic library environment?

This chapter outlines the study's research approach, design and methods. It also discusses validity and reliability of the data collection instruments and the study's ethical considerations.

3.2 Research paradigm and approach

Research methodology is defined as the "overall approach to the research process, from theoretical underpinning to the collection and analysis of data" (Collins & Hussey, 2003: 55). It is, therefore, central to the research process since it is the "lens through which a researcher looks" to get answers to research questions in order to "understand reality" (Dawson, 2007: 15; Ngulube, 2015: 127). The choice of a research methodology is determined by the "underlying theoretical paradigm" (Ngulube, 2015: 128). This study adopts a pragmativist

paradigm, allowing it to draw from both qualitative and quantitative philosophical assumptions (Creswell, 2014: 10).

The pragmativist paradigm, as opposed to other paradigms like positivism, is appropriate for this study as it allows for subjective input, focuses on 'real-world' situations and permits researchers to collect both qualitative and quantitative data to "provide the best understanding of a research problem" (Creswell, 2014: 11). Positivism, on the other hand, is concerned with "uncovering the truth" via experimental, objective and "non-interactive" means (Travis, 1999: 1042). Unlike other paradigms such as interpretivism, which focuses on a single research approach for data collection, the pragmativist paradigm employs "pluralistic approaches" to understand the problem, thus, resulting in rich data. This study focuses on a specific case (NUL Library) to understand and make meaning of the situation with regard to knowledge and skills requirements, and as such, different data collection approaches were appropriate and useful in understanding the NUL Library situation. Hence, the relevance of the pragmativist paradigm for this study.

The three methodological approaches that are generally used in research are qualitative, quantitative and mixed methods. Research approach refers to a detailed plan for research, which is selected based on the nature of research problem being addressed, to collect, analyze and interpret data (Creswell, 2014: 3). Each approach has strengths and weaknesses and advantages and disadvantages, and neither is "superior to the other in all respects" (Kumar, 1996: 12). However, qualitative and quantitative approaches are the most used research methodologies (Silverman, 2013: 123). Creswell (2014: 3) points out that mixed methods research is situated in the middle of a "continuum" as it combines both qualitative and quantitative approaches.

Qualitative research seeks to make sense of the real world and describes characteristics, stories, experiences, attitude and behaviours of people and events in depth without using numbers, statistics and quantities for data analysis (Patton & Cochran, 2002: 2; Thomas, 2003: 1; Dawson, 2007: 15). This approach explores and understands meanings and situations through such methods as participant observation, content analysis, in-depth interviews and other methods of data collection (Creswell, 2014: 3; Babbie, 2016: 381).

On the contrary, quantitative research is “a means for testing objective theories by examining the relationship among variables” (Creswell, 2014: 4). Variables can be systematically measured to analyze numbered data using statistics, tables or charts to maintain standardization (Neuman, 2012: 92). Quantitative research generates statistics and numbers through methods such as questionnaires and highly structured interviews through descriptive, explanatory or large scale survey research (Dawson: 2007: 16; Babbie, 2016: 411).

This study adopts a “convergent parallel mixed method” approach (Creswell, 2014: 15). It is a form of mixed methods approach in which the researcher “converges or merges” quantitative and qualitative data in order to offer a broad and complete analysis of the research problem (Creswell, 2014: 15). In this approach, data collection for both forms is done concurrently (hence “parallel” mixed methods), and results are integrated (hence “convergent”) for overall interpretation (Creswell, 2014: 15).

The advantage of mixed methods is that combination of strengths for both methods provides a better understanding of a phenomenon than either method alone (Creswell & Plano Clark, 2011: 282; Ngulube, 2015: 127; Babbie, 2016: 121). This happens as a result of flexible open-ended qualitative data (without predetermined responses) and quantitative closed responses (Creswell, 2014: 14). In other words, the strengths of one approach make up for the weaknesses of the other.

A mixed methods research approach was chosen for this study because it was regarded as being useful to ascertain the relationship of users and librarians (quantitative aspect), and also to ‘explore’ and ‘understand’ (qualitative aspect) what knowledge and skills are required to provide efficient information services at the NUL Library in order to meet the information needs of humanities undergraduate students in a digital era.

3.3 Case study research design

Research design refers to “procedure” or “types of inquiry within qualitative, quantitative, and mixed methods approaches” (Creswell, 2014: 247), which includes ethnography, phenomenology, survey, case study and other research designs. While research design is an

overall plan of how a study would be conducted, research methods are specific tools used within the research design for data collection.

A case study design was employed for this study because it was appropriate for the context of the NUL Library as an organization. Yin (2014: 3) refers to a case study as a common research design used in various situations to contribute to people's knowledge about organizations, individuals, groups and related phenomena. This study looked at knowledge and skills requirements of librarians in the digital era academic library environment, with specific reference to the case study of the Thomas Mofolo Library which is the main library of the National University of Lesotho (the NUL Library). Yin (2009: 18) points out that case studies are useful to understand real life contexts. According to Mouton (2001: 149) case studies are usually qualitative in nature and aim to provide an "in-depth description" of a situation. In concurring, Yin (2014: 4) states that a case study helps to "understand complex social phenomena" and allows researchers to concentrate on a "case" and "retain a holistic and real-world perspective" of a situation being studied, such as that of the NUL Library.

Maree (2007: 76) cautions that case studies have been criticized for depending on a single case and being incapable of providing general conclusions (generalizations). However, Maree (2007: 76) emphasizes that the purpose of a case study is to gain insights and understand the dynamics of specific situations, as the researcher wished to do in the case of the NUL Library. Ngulube (2015: 135) specifies that a case study approach fits into both quantitative and qualitative research. Hence the researcher, using a mixed methods research approach within a pragmativist paradigm, found a case study design pertinent to investigate the problem which this study addresses.

3.4 Research methods

Research methods refer to data collection techniques and tools such as the use of questionnaires, interviews, observations and document review (Ngulube, 2015: 129). Research methods are specific and involve data collection, analysis and interpretation of the study (Creswell, 2014: 247).

3.4.1 Population and sampling

Population is “that group (usually of people) about whom we want to draw conclusions” (Babbie, 2016: 116). Population can consist of objects, people or events (Walliman, 2011: 185). The target population for this study included NUL librarians and humanities undergraduate users of the NUL Library.

According to Babbie (2016: 116) it is “almost never” possible to study all members of a population, and hence a sample is selected to adequately represent the whole population (Fisher, 2010: 207). A sample refers to “a selected small collection of cases or units that closely reproduces features of interest in a larger collection of cases” (Neuman, 2012: 146). Sampling applies to both qualitative and quantitative studies especially when the population is too large to include the entire population (Creswell & Plano Clark, 2011: 173). In a mixed methods study, the two samples should “have different sizes, with the size of the qualitative sample much smaller than the quantitative sample” (Fisher, 2010: 208; Creswell & Plano Clark, 2011: 183). This helps to obtain “an in-depth qualitative exploration and a rigorous quantitative examination of the topic” (Creswell & Plano Clark, 2011: 183). In the current study this very nature of sampling was applicable to the NUL librarian and NUL humanities undergraduate student sub-populations. Non-probability purposive sampling was employed to collect qualitative data (from the librarians) whilst probability random sampling was adopted to obtain quantitative data (from the humanities undergraduate students).

Non-probability purposive sampling, also known as judgmental sampling, is a type of sampling that permits the researcher to purposely select respondents. Purposive sampling refers to the selection of a sample based on the knowledge of a population (Creswell & Plano Clark, 2011: 173; Neuman, 2012: 149; Babbie, 2016: 187). Hence, purposive sampling was relevant for this study as the researcher was conversant with the librarians of Thomas Mofolo Library (NUL main library), and thus was in a good position to identify and reach them for data collection purposes. Moreover, selection of sampling units based on the researcher’s prior knowledge made possible a rich source of data in response to the study’s research problem. Selection of librarians for interviews was based on purposive sampling at different levels of the

organizational hierarchy, meaning that interviews were done with librarians in different positions within various departments and units of the library.

Case studies focus on intensive and in-depth “specific unit[s] of analysis”, and hence they generally require a much smaller sample size because large samples can reduce their effectiveness (VanWynsberghe & Khan, 2007: 83; Fisher, 2010: 208; Creswell & Plano Clarke, 2011: 183; Yin, 2014: 12). Out of 35 professional NUL librarians, only 28 were available at the time of data collection (October 2016) as the rest (seven) were on study leave (NUL Library, personal communication 2016, July 27). From these 28 professional librarians, 13 were purposively selected for interviews: the Director of the NUL Library, three section managers and three librarians at operational level in each section. Such a selection of interview participants allowed for soliciting of views on required competencies across the hierarchy of a learning organization such as the NUL Library (see Table 3.1).

Table 3.1: NUL librarian interview respondents

Sub-population category	Population size	Sample size
Professional librarians	35	13

Random sampling (a probability sampling method) was also employed to obtain quantitative data for the study. Random sampling gives every member of the specified population an equal chance of being part of the sample (Pickard, 2013: 61). The random sampling was further narrowed down to stratified random sampling to ensure that all strata among humanities undergraduate students (for example, age, year of study, humanities departments) were represented in the selected sample. Walliman (2011: 186) explains that this type of sampling classifies subjects into various categories (strata) to ensure representativeness and hence the findings may be generalized to the entire humanities undergraduate user sub-population. In 2016 NUL had a total population of 998 humanities undergraduate students (National University of Lesotho, 2016). This study excluded 6,034 undergraduate students from other faculties and 177 postgraduate students, as the focus of this study was on NUL humanities undergraduate students.

The *Survey system* software Web tool (Creative Research System 2012) was used to calculate the sample size and confidence interval for the population of NUL humanities undergraduate students: a sample of 278 was calculated from the population of 998 students, with a confidence level of 95% and sampling margin of error of 5. The researcher used the sample size table developed by Research Advisors (2006) to verify the accuracy of the online calculator and it recommended the same figure. As a result, a sample of 278 humanities undergraduate students was chosen to participate in the study (see Table 3.2).

Table 3.2: NUL humanities undergraduate student questionnaire respondents

Sub-population category	Population size	Sample size
Humanities undergraduate students	998	278

3.4.2 Data collection

Data collection in the convergent parallel mixed methods approach involves collecting both qualitative and quantitative data concurrently (Creswell & Plano Clark, 2011: 180). The tools that are usually used to gather data include surveys, interviews, observations, documentation review and physical objects (Maree, 2007: 76). According to Thomas (2003: 35) case studies use a number of instruments for data collection, and the data collected is mostly qualitative but may also include quantitative data. Thomas affirms that both data collection methods can be used together to complement each other, since no single method has a complete advantage over the other. In view of the study's convergent parallel mixed methods approach, both qualitative and quantitative data were collected, at roughly the same time, and analyzed separately, but then integrated in the interpretation of overall findings (Creswell 2014: 219).

3.4.2.1 Interviews

An interview has been identified by Yin (2009: 106) as one of the most important data collection techniques for qualitative studies. Thus, interviews were used as the primary data collection instrument for qualitative data, for this study. An interview is a communication process with the sole purpose of obtaining information from identified respondents (Lues & Lategan, 2006: 20).

Interviews have a number of advantages which include, among others, to obtain rich descriptive data, ability to guide the interview to maintain focus, instant and relevant responses, higher response rate, ability to explore questions, in-depth probing and “trust building”, as participants may reveal information which may not be possible to be collected in any other way (Maree, 2007: 87; Babbie, 2016: 267). However, Thomas (2003: 64) criticizes interviews for bias due to potential problems such as poorly articulated questions and reflexivity usually caused by the interviewee who gives interviewers what they need to hear. Babbie (2016: 268) points out that interviews can be time consuming. However, to overcome the disadvantages of interviews, the researcher conducted a pre-testing of the interview instrument to ascertain if the questions and issues posed were effective in eliciting the data required and whether any re-structuring of questions were required. The researcher also kept to the time allotted for interviews and assured respondents that honest responses were accepted even if they were different from the researcher’s own perspective.

Since interviews probe and provide in-depth information, face-to-face semi-structured interviews were conducted with Thomas Mofolo (NUL main library) librarians to collect qualitative data. The semi-structured interview usually requires participants to answer predetermined questions and enables the researcher to explore and probe the responses (Maree, 2007: 87) – see Appendix B.

3.4.2.1. 1 Interview guide design

The interview guide is important to provide direction for the conversation (Pietersen, 2015: 37). The researcher carefully constructed and set specific questions based on the research questions guiding the study (see Appendix B). These research questions were informed by the theory supporting this study – organizational learning theory, and hence the researcher ensured that the interview guide reflected the theory supporting the study. The interview guide helped to avoid the problem of bias and reflexivity as mentioned by Thomas (2003: 64), whilst obtaining different perspectives regarding knowledge and skills required by NUL librarians in the digital academic library environment. Open-ended in-depth questions were asked. A set of exploratory interview questions were used as the core data collection technique for this study.

3.4.2.2 Questionnaires

A questionnaire is a written set of questions which looks like its interview schedule counterparts, followed by answer categories (in case of closed questions) or with a few open-ended questions (Abbott & McKinney, 2013: 210). The advantages of questionnaires include asking more sensitive questions and being much less costly than interviews. The downside to questionnaires include lower response rate as participants tend to write responses such as “I don’t know” or “no answer” (Cox & Corral, 2013: 1529). Questionnaires are also criticized for being longer and more complex than interviews (Abbott & McKinney, 2013: 210). For this study, a structured questionnaire was administered to humanities undergraduate students (see Appendix C) to triangulate data collection from the semi-structured interviews conducted with NUL librarians. Despite disadvantages mentioned earlier, a questionnaire (especially structured questionnaires) is a useful way of collecting data from the target population as it is more cost effective, is capable of collecting maximum amount of data, and makes analysis easier because “coding is built into the answer categories themselves” (Abbott & McKinney, 2013: 213). The researcher requested approximately 10 minutes of respondents’ time to complete the questionnaire to encourage completion. Pre-testing was conducted to overcome some of the disadvantages mentioned.

3.4.2.2.1 Questionnaires design

According to Welman, Karuger and Mitchell (2005: 174), a questionnaire should be carefully designed to reflect the study’s research problem and critical questions as well as the theory informing the study. Organizational learning theory informed the design of questions, where applicable, and questionnaire items were crafted in response to the research questions guiding the study (see Appendix C). The type of questions asked were closed, thus respondents (humanities undergraduate students) were simply required to tick the appropriate box making the instrument quick and easy to complete. Closed or pre-coded questions offer respondents a range of answers to choose from (Welman, Karuger & Mitchell, 2005: 174). The questionnaire included a cover page with a preamble (see Appendix C) explaining the objective of the study, instructions and confidentiality and anonymity statements. It was pre-tested to ascertain any ambiguities or other anomalies that needed correcting.

3.4.2.3 Informed consent form and ethical clearance

Informed consent means “voluntary agreement to participate in research” (Shahnazarian et al., 2013: 3). It must be obtained from all human subjects before participating in a study. The informed consent form for this study (see Appendix A) was designed concurrently with the questionnaire and interview guide as it was part and parcel of data collection process of the study. The informed consent form for NUL librarians along with data collection instruments were submitted to Library and Information Studies Centre (LISC) Research Ethics Committee, acting on behalf of the Humanities Faculty of the University of Cape Town (where the study was registered), to obtain ethical approval (see Appendix D) to conduct the study. Once this ethics clearance was provided, the researcher sought permission from NUL and received approval to carry out the study (see Appendices E and F). With approvals from both UCT and NUL in hand, the researcher enquired about the procedure (NUL protocol) for accessing students and then began with pre-testing of both data collection instruments.

3.4.2.4 Pre-testing of data collection instruments

Pre-testing refers to the “procedure used to test the reliability and validity of new (original) survey items” (Abbott & McKinney, 2013: 406) on a small number of units from the target population (Walliman, 2011: 365). According to De Vos et al. (2011: 240) pre-testing is done to improve the instrument whilst providing as much feedback as possible.

For the questionnaire pre-testing, the researcher selected eight undergraduate students from various departments in the Humanities Faculty, UCT where this study was registered for a Master of Library and Information Studies (MLIS) degree, to voluntarily complete the questionnaire. A librarian from UCT Libraries and two NUL librarians were selected as test respondents to pre-test the interview guide for this study. The researcher was aware that pre-testing is “difficult to perform in a qualitative investigation, yet it is very important” (De Vos et al., 2011: 240). Respondents were informed that collection of data at that point was for testing the instruments, thus the researcher instructed them to pay attention to any ambiguities that could lead to misinterpretation especially in the questionnaire instrument. Pre-testing was executed the same way as the main study and was scheduled for five days. However, it took longer than anticipated because it was difficult to access test respondents

due to student protest instability at the University of Cape Town and in higher education nationally (South Africa), at the time (September 2016). While most of the pre-testing was done at UCT, it was completed at the University of Lesotho with two librarian pre-test candidates from the NUL Library, for reasons explained.

The researcher went through the feedback with the participants and adjusted the instruments where necessary; and also took into account the recommendations made by test respondents such as to relax and not to rush when asking questions so as to enable respondents to assimilate questions in order to yield expected data. The results of the pre-testing were not counted in the main study; and the subjects that took part in pre-testing did not participate in the main investigation.

3.4.2.5 Administration of instruments

In terms of the NUL protocol for accessing students for data collection, the Heads of Departments in the Faculty of Humanities agreed to administer the questionnaire on behalf of the researcher. The researcher stated the purpose of the study and explained the questionnaire to Heads of Departments and lecturers involved, individually. They divided the questionnaires according to different programmes and years of study and delivered them in person (hardcopy) to humanities undergraduate students during lecture hours, and asked students to voluntarily complete them. NUL has no online facility for questionnaire administration. Hand delivery, however, allowed better access to students and follow-up with lecturers administering and collecting the questionnaires, thus ensuring a better return rate. Completed questionnaires were returned to either lecturers, Head of Departments or to the Administrator's office, making collection on the side of the researcher easy. The questionnaire administration began on 5 October 2016 and ended on 28 October 2016. A total of 206 completed questionnaires were returned.

Interviews were conducted with purposively selected NUL librarians in parallel with the questionnaire administration. The researcher requested a 30-minute appointment with identified NUL librarians for interviews. Interviews were conducted at the NUL Library at a convenient time chosen by the respondent. Three days before conducting interviews, the researcher distributed and explained informed consent to respondents to ensure that there

was mutual understanding before they (respondents) signed the informed consent forms. Before commencement of each interview, the researcher stated the study's purpose and ensured that the respondent had signed the informed consent form (see Appendix A).

All interviews were conducted in a uniform way (see Appendix B) in order to collect required data for different sections of the interview guide. Interviews were conducted from 10 October 2016 to 17 October 2016. Responses were prudently recorded during the interview process as "recording an interview must be done in a meticulous manner" (Maree, 2007: 89). An audio recorder was used with permission from the interviewee to record the interview. Respondents were assured that once the transcription is completed, the recordings would be deleted. The researcher took brief notes, to remember certain scenarios, during the interview process. At the end of each interview, the researcher recorded the date, time and duration of the interview. The average length on the interviews was 30 minutes. A total of 13 NUL librarians were interviewed. Data collection ended on 28 October 2016.

3.4.3 Data analysis

Data analysis is defined as "breaking up the data into manageable themes, patterns, trends and relationships" (Mouton, 2001: 108). Data analysis brings data together in a meaningful manner and enables the researcher to interpret or make sense out of it. Since this study employs convergent parallel mixed methods, both qualitative and quantitative data were collected, analyzed and reported separately (Creswell, 2014: 15). The findings from the analysis of data from both the interviews and the questionnaire administration were collated under the same theme since the two data collection instruments, for triangulation purposes, addressed similar issues (see Appendices B and C) in response to the research questions guiding the study.

3.4.3.1 Content Analysis

For this study, it was appropriate to use content analysis for analysis of the qualitative data collected via the semi-structured interviews with NUL librarians. Content analysis is "a systematic approach to qualitative data analysis that identifies and summarises message content" (Maree, 2007: 101) and is generally used when working with narratives and open-

ended questions from surveys, focus groups or interviews. The researcher, in this study, explored concepts and meanings in text and compared them to determine similarities and differences that would help to understand and interpret raw data (O’Leary, 2005: 559).

3.4.3.2 Coding system

A coding system was developed to analyze both qualitative and quantitative data for this study. Systematic coding has been identified by Walliman (2011: 217) as an important qualitative data analysis method in the arrangement of abundant data such as notes and transcripts. For qualitative data, largely comprised of recordings, the researcher looked at data from different angles, identified concepts and organized data under common themes based on the sections of the interview guide (refer to Appendix B). Those data segments were marked with meaningful symbols, words or unique identifying names (Maree, 2007: 105). A code or label was then assigned to signify each segment. This process enabled the researcher to collect together and retrieve quickly all the text and data associated with the identified themes and concepts (Maree, 2007: 105).

The researcher grouped the responses according to their patterns and themes to make meaning in order to answer the research questions of the study since they are a guide of the entire research (Yin, 2009: 134). Data collected were analyzed and presented using graphs and charts for frequency counts and percentage distributions for quantitative data and using tables for both narratives and descriptive statistics, where necessary, for qualitative data (refer to Section 4.3 of Chapter 4). The type of display depended on the type of variable being displayed. For example, frequencies were displayed in either table, bar graph or pie chart.

The entire data analysis process was done ‘by hand’ so that the researcher could develop a greater understanding of the data collected in order to ‘make sense’ (Travis, 1999: 1042) out of the relationships between the results and research questions of the study. The relative smallness of the study (minor dissertation) and one case study unit, made manual data analysis feasible and obviated the need for software use. The results were tabulated according to frequency distributions, using *Microsoft Excel*.

3.5 Validity and reliability

Validity means “measuring the accuracy of a measure (variable)” while reliability means a “measure of consistency” (Abbott & McKinney, 2013: 210). Reliability focuses on stability of instruments over time (test-retest correlations) and on “consistency in test administration and scoring” (Creswell, 2014: 201). According to Leedy and Ormrod (2005: 29) measuring something consistently does not necessarily mean measuring it accurately. They affirm that reliability is insufficient without validity. This implies that both validity and reliability reflect the degree to which errors might be encountered in measurements (Leedy & Ormrod, 2005: 29). Creswell (2014: 227) specifies that in qualitative research, researchers employ “validity strategies” as procedures to check the accuracy of the findings and to convince readers of this accuracy.

In order to ensure validity, the questions in the instruments were based on the research questions, literature review and the theory supporting the study. The data collection instruments were pre-tested to determine the accuracy and validity of the questions in collecting the expected data. The necessary adjustments were made to the instruments to ensure that questions were concise, simple, clear and relevant to the study. The notes captured during the interviews were validated against the audio recording of the interviews. For overall validity in data collection, the researcher converged or triangulated multiple data collection methods (questionnaires and interviews) which ran in parallel to obtain required information. Pre-testing of the instruments, especially the questionnaire assisted the researcher to ascertain if the respondents provided the answers to the research questions as expected and this contributed to reliability in data collection.

3.6 Ethical considerations

Ethical behaviour is critical in research as in other fields that involve human activity (Sarantakos, 2013: 15). The “principle underlying ‘research ethics’ are universal and concern issues such as honesty and respect for the rights of individuals” (Welman, Karuger & Mitchell, 2005: 174). Dawson (2007: 150) defines research ethics as making “sure that we treat both the participants and the information with honesty and respect”. For this study, the researcher considered general issues concerned with research and in particular the conduct of the

researcher (Ngulube, 2015: 128). The researcher sought official approval from the University of Cape Town (where the study was registered) and from NUL to obtain necessary clearance declaring that this research was ethically sound.

Honesty and openness were maintained throughout the entire research process. Anonymity of the results for this case study was assured and confidentiality of the respondents' contributions was also guaranteed. The researcher ensured that participants were aware of all the above before taking part in the study. Plagiarism is a serious offence against honesty (Walliman, 2011: 240), thus the researcher cited and acknowledged people's work and ideas in the preparation of this research report.

Interview discussions were openly recorded (with permission) and casual conversations were not used as research data. Maree (2007: 89) insists that "a tape recorder should be used to record the interview, but remember to get permission from the participants before you begin the recording". Most importantly, the researcher ensured that the interviewees understood the purpose of the interview and agreed to it. Agreement to be interviewed is crucial for it means that there is informed consent (Denscombe, 1998: 109).

However, interviewees were free to withdraw from the study at any time without notice even though it might be inconvenient for the researcher (Walliman, 2011: 271). Participation should be free, voluntary and fully informed (Sarantakos, 2013: 18). All this was observed – during the study, one librarian approached did not agree to participate. This was respected. Three interviewee respondents did not agree to be recorded, and thus the researcher respected their choices and took notes instead of recording. In the case of the questionnaires, completion by students was completely voluntary. Data was analysed and reported accurately even when things did not turn out as expected. Walliman (2011: 242) emphasizes that "silently rejecting or ignoring evidence that happens to be contrary to one's beliefs constitutes a breach of integrity". This was observed by the researcher.

3.7 Evaluation of methodology

Walliman (2011: 8) points out that evaluation, which means "making judgment about the quality of objects", must be relevant to the context and intentions of research to be

considered useful. The convergent parallel mixed methods approach was suitable for this study in identifying humanities undergraduate students' information needs and concurrently ascertaining knowledge and skills requirements of NUL librarians. The pragmativist paradigm in which the study was located, allowed it to draw from both qualitative and quantitative philosophical assumptions. The pragmativist paradigm focuses on understanding the "real-world" from both subjective and objective aspects of research even though it offers emphasis on the subjective aspect (Morgan, 2007: 73). Thus, it fitted well in the study's case study design because case studies are complex and require to be carefully deduced in trying to understand them to elicit meaning.

The target population and sampling (NUL librarians and humanities undergraduate students) proved adequate for this study. Non-probability purposive sampling was relevant for qualitative data collection whilst random probability sampling was appropriate for quantitative data collection and its representativeness allowed for generalization of findings to the NUL humanities undergraduate student population. Data collection instruments (interview and questionnaire) collected the required data as the design of the instruments were well informed by the research questions guiding the study, literature reviewed for the study and organization learning theory supporting the study. Pre-testing the research instruments enhanced the study's response rates and yielded rich responses addressing the study's research problem and main objective. For data analysis, content and coding systems with descriptive statistics, where needed, also enhanced the presentation of findings in a format simple to understand.

3.8 Summary

This chapter discussed the convergent parallel mixed methods approach employed by this study. It also discussed the pragmativist paradigm in which the study was located as well as the NUL Library case study research design. The chapter further outlined the target population for this study which included NUL librarians and humanities undergraduate users of the NUL Library, non-probability purposive sampling employed to collect qualitative data (from the librarians) and probability random sampling adopted to obtain quantitative data (from NUL humanities undergraduate students). Data collection via face-to-face semi-

structured interviews with NUL librarians and a structured questionnaire for students, pre-testing of data collection instruments conducted to validate research instruments, data analysis, reliability and validity, ethical considerations as well as evaluation of methodology used in the study, were discussed in the latter part of this chapter. The next chapter presents the findings based on the analysis of the data collected

Chapter 4: Presentation of findings

4.1 Introduction

Chapter 3 discussed the research approach, design and methods, including data collection techniques employed to gather data for this study. This chapter presents findings from the semi-structured face-to-face interviews (refer to Appendix B) conducted with purposively selected NUL librarians and the structured questionnaire (refer to Appendix C) administered to a stratified random sample of NUL humanities undergraduate students.

The main objective of this study was to ascertain what knowledge and skills are required for NUL librarians to meet the information needs of humanities undergraduate students in the digital era academic library environment. The study research questions (refer to Section 1.5 of Chapter 1), informed by organizational learning theory (Argyris & Schon, 1978: 2; Arias & Solana, 2013: 704), were generated to address the above objective.

The empirical data collected for this study via interviews and a structured questionnaire were used to address the study's research questions in response to the main objective of the study. This chapter reports on the return rates from administering the study's data collection instruments, and presents the study's findings. Findings are presented using graphs for frequency counts and percentage distributions for quantitative data, and tables for narratives and descriptive statistics, where necessary, for qualitative data. Where necessary, percentages have been rounded off to the nearest whole figure. The findings from the analysis of data from the interviews and from the questionnaire administration are presented consecutively under the same themes as the two data collection instruments, for triangulation purposes, addressed similar issues (see Appendices B and C) with the two respondent groups (that is, NUL librarians and humanities undergraduate students) in response to the critical questions guiding the study. In Chapter 5, however, discussion of these findings are integrated in response to the five research questions guiding the study.

4.2 Return rates

The structured questionnaire (Appendix C) was administered to a targeted sample of 278 students out of a humanities undergraduate population of 998 (refer to Section 3.4.1 of Chapter 3 for more details). A total of 206 (74%) completed questionnaires were returned. One questionnaire could not be used as it was considered spoilt because the respondent did not belong to the Faculty of Humanities. Hence the eventual number of usable returned questionnaires totalled 205 giving the study an effective return rate of 74% from the targeted student respondent group. According to Ruel, Wagner and Gillespie (2016: 162) this may be considered a good response rate. They claim that if the response rate is greater than 70%, it means that the “dataset is of good quality and can be considered to represent the population”. Thirteen (13) NUL librarians were targeted for interviews (refer to Section 3.4.1 of Chapter 3 for more details) and all the 13 interviews (100%) were conducted.

4.3 Presentation of findings

The presentation of findings in this chapter follow the sequence of the questions in the interview guide (refer to Appendix B) and the questionnaire (refer to Appendix C) which were designed with common themes, for triangulation purposes (as mentioned in Section 4.1 of this chapter) and in anticipation of an integrated discussion in Chapter 5 under each of the five research questions guiding the study.

4.3.1 Respondents' profiles

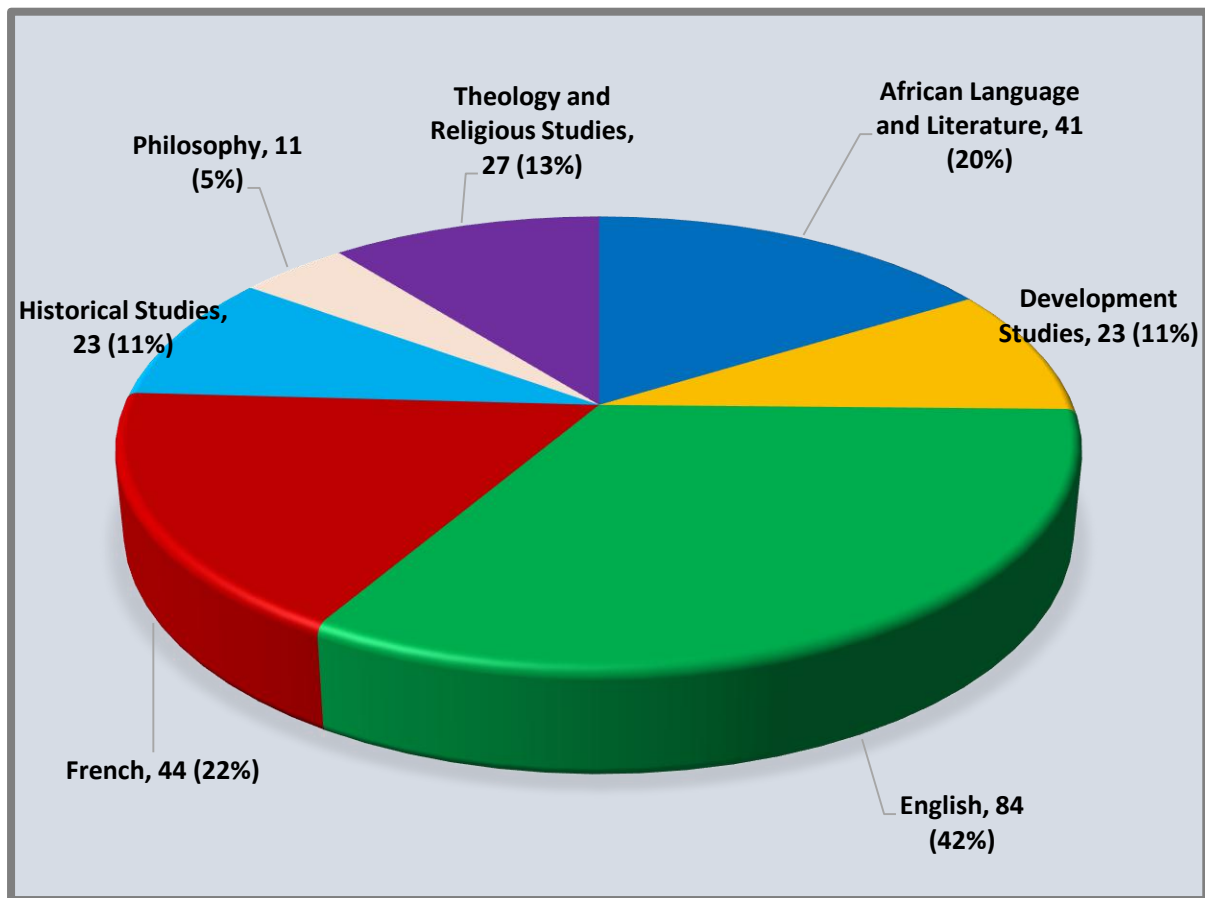
This section presents the biographical data of respondents collected through the questionnaire and the interviews. The questionnaire was administered to a stratified random sample of undergraduate students in the Faculty of Humanities and interviews were conducted with purposively selected librarians from different levels of the organizational hierarchy and across sections and units in the Thomas Mofolo Library (NUL main library).

Biographical information for undergraduate students

Respondents were asked to indicate the humanities faculty department/s in which they are registered. They had to choose from the list of seven departments (refer to Appendix C) from which the sample was drawn. Two hundred and two (202) of the 205 respondents responded

to this item while only three did not respond. In Figure 4.1 which captures department registration, the total responses do not add up to the N figure of 202 (or 100%) as students are likely to have been registered in more than one humanities faculty department and hence would have selected multiple departments. It would seem that the highest registrations (84 or 42%) were with the English department followed by French (44 or 22%).

Figure 4.1: Humanities departments in which respondents were registered (N=202)



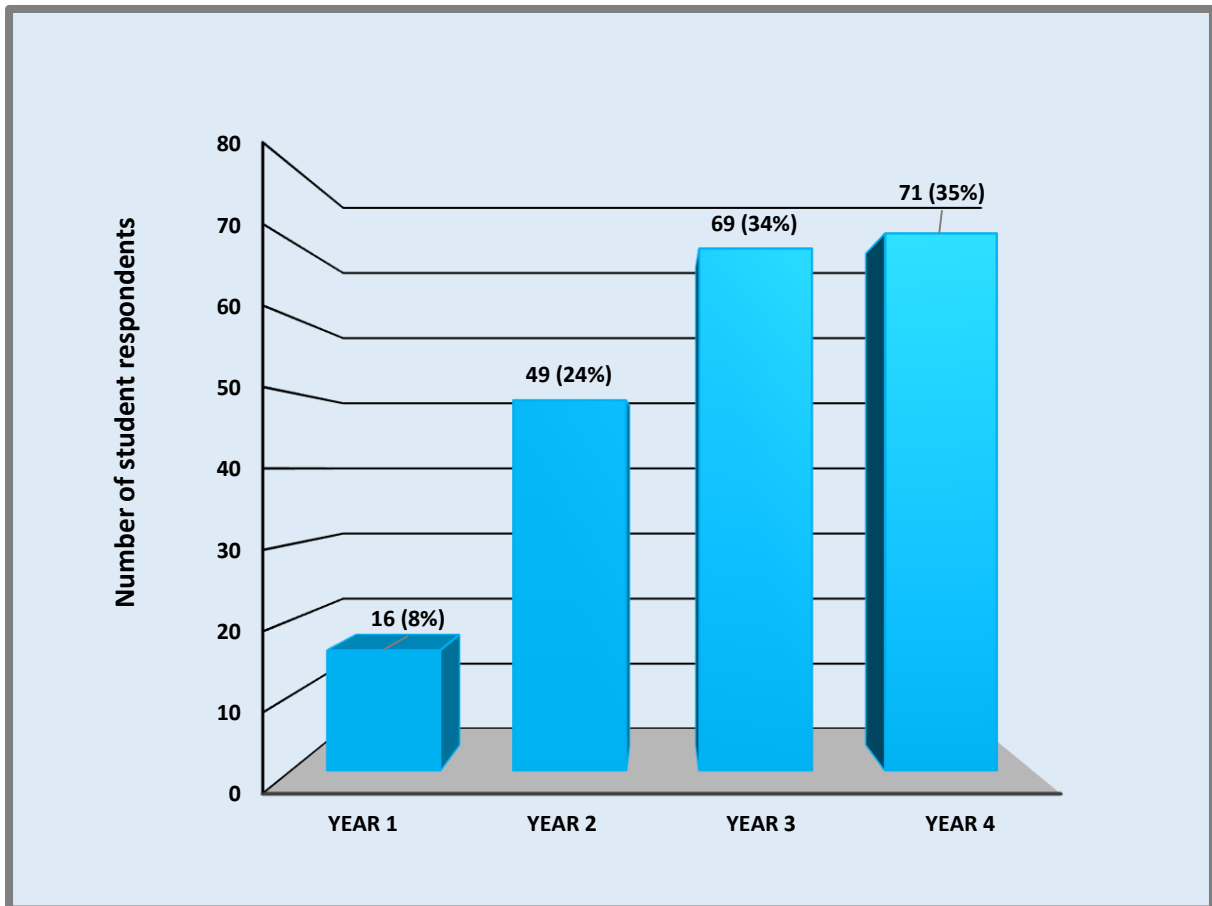
Students were also asked to indicate their programmes of study. Of the 205 students 194 responded while 11 did not respond to this item. Table 4.1 displays the list of programmes of study that student respondents were registered for at NUL. Most students in the sample surveyed were registered for the Bachelor of Arts (Humanities) programme.

Table 4.1: Student respondents' programmes of study (N=194)

Programme of Study (BA=Bachelor of Arts; DLIS=Diploma in Library and Information Science)	Frequency	Percentage
BA Humanities	119	61%
BA Education	56	29%
DLIS	19	10%
Total	194	100%

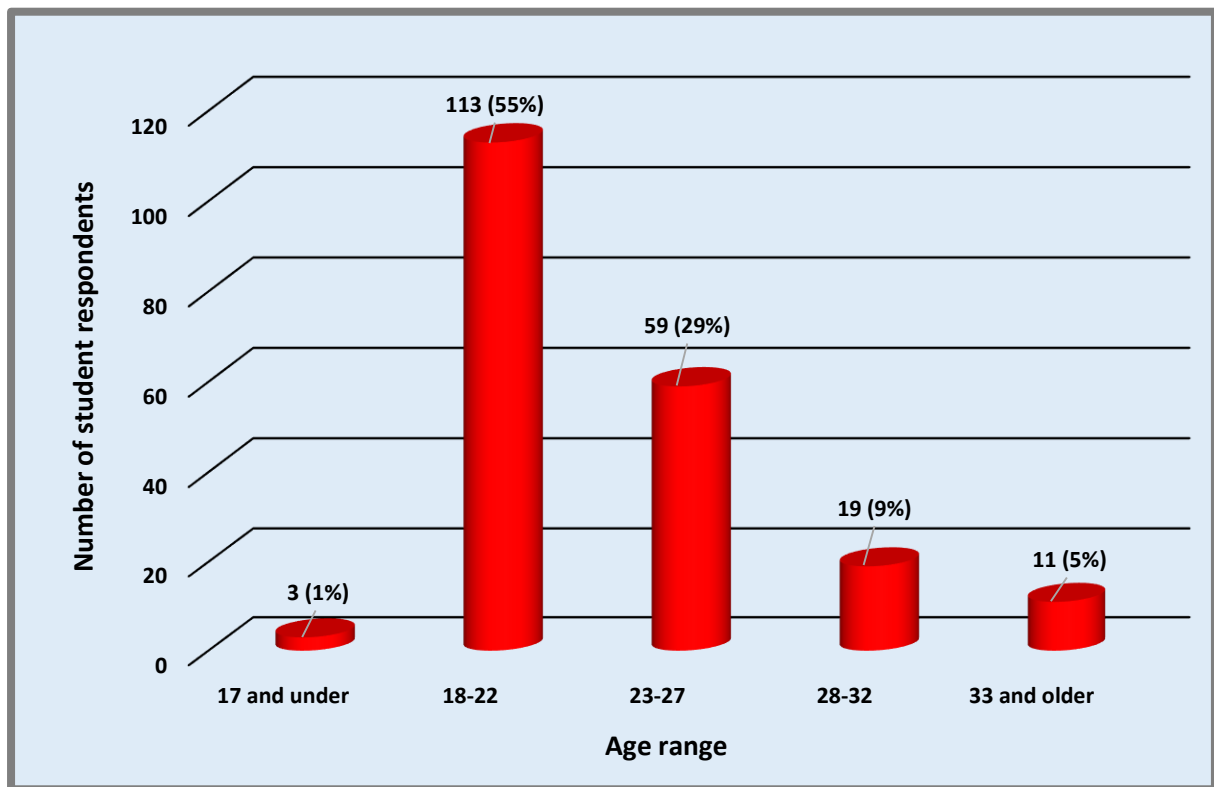
Respondents were asked to indicate the current year of their study as an effort was made to draw undergraduate students from all levels of undergraduate study for representativity in the sample. Figure 4.2 reflects that the majority of respondents were senior undergraduate students as they were in their third year (69 (34%)) and fourth years (71 (35%)) of study. However, the sample also included first and second year undergraduate students as well.

Figure 4.2: Student respondents' year of study (N=205)



The student respondents were also asked to state their age range. The age groups were divided into the age ranges as set out in Figure 4.3. The findings show that most NUL students are young adults. The majority of student respondents, 113 (55%) and 59 (29%), fall within the 18-22 and 23-27 age groups, respectively. These are the age categories of individuals generally considered to be technology savvy (Biswas, 2009: 133).

Figure 4.3: Age range of student respondents (N=205)



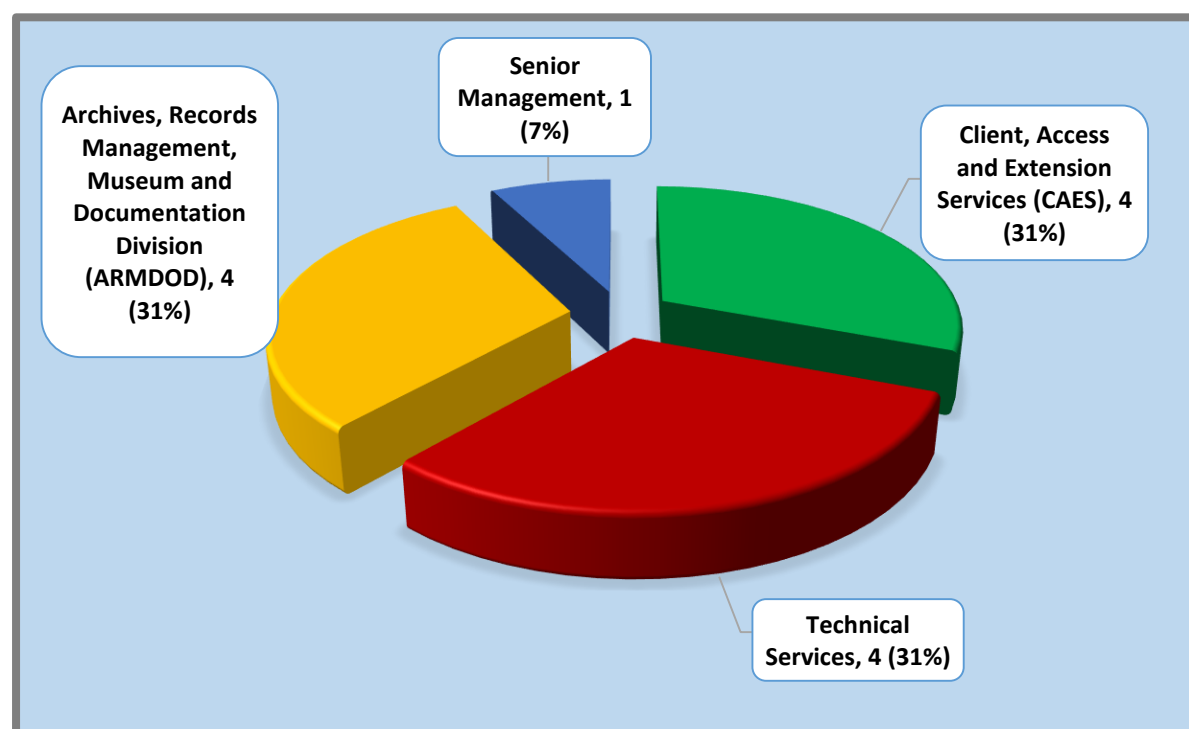
Biographical information for NUL librarians

The interviewed librarians were asked to indicate their current job titles and departments or sections of the library in which they are employed (refer to Appendix B). Table 4.2 lists the librarians' job titles and Figure 4.4 captures departments or sections in which they are employed. Each major section of the library was represented by four librarians each and one librarian represented the senior management level. The respondents were purposively selected for their potential contribution to rich data collection for the study.

Table 4.2: Current job titles of NUL librarians (N=13)

Job title	Frequency
Librarian	3
Client Access Assistant	3
Documentation Officer	1
Assistant Archivist	1
Archivist	1
Head – Technical Services	1
Head – Client, Access and Extension Services (CAES)	1
Head – Archives, Records Management, Museum and Documentation Division (ARMDOD)	1
University Librarian	1
Total	13

Figure 4.4: Department/Section in which interviewed librarians are employed (N=13)



The interviewed librarians were asked for how long they have been in their current positions and for how long they have been employed in a professional capacity in an academic library. These findings are captured in Table 4.3. It is interesting to observe that the majority (9) of the 13 interviewed librarians have been employed in a professional capacity in an academic

library (NUL or elsewhere) for more than 10 years – an indication that professional LIS experience is in abundance in the NUL Library.

Table 4.3: Length of period for librarian respondents in current position and professional capacity (N=13)

No. of years	Current position – no. of respondents	Professional capacity – no. of respondents
Less than a year	5	0
1-3 years	3	1
4-6 years	2	3
7-10 years	1	0
More than 10 years	2	9
Total	13	13

The interviewed librarians were also asked to indicate their highest academic qualifications and their highest LIS qualifications. The latter is captured in Table 4.4. Not surprisingly, all 13 librarians' highest qualifications were LIS qualifications. Four of the librarians interviewed declared that their first degrees were not in LIS but subsequent postgraduate qualifications were in LIS. Almost half of the 13 interviewed librarians hold master's degrees in LIS which is a good indication of highly qualified LIS staff in the NUL Library. (N=13)

Table 4.4: NUL librarians' highest LIS qualifications (N=13)

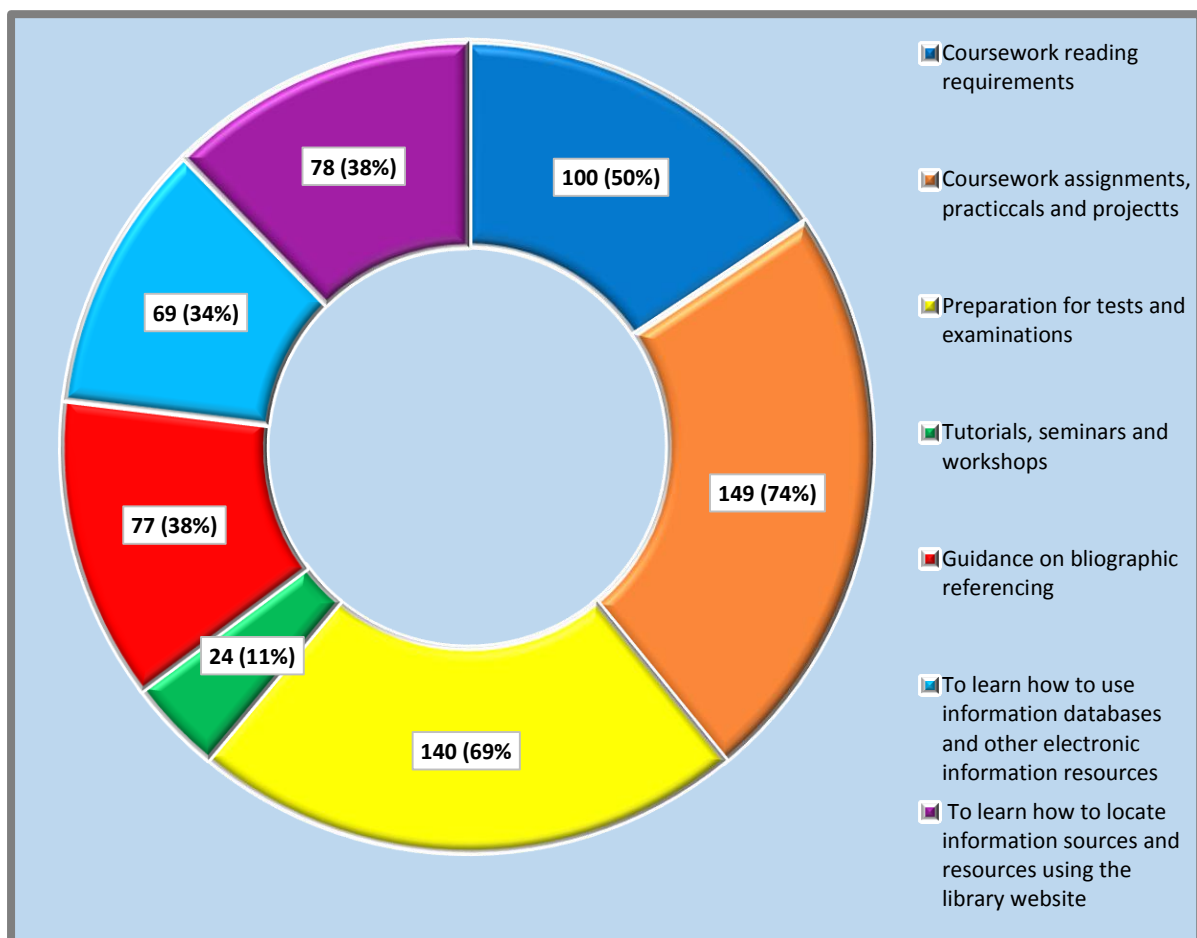
LIS qualification	No. of respondents	Percentage
Master's	6	46%
Diploma	4	31%
Honours	1	8%
Bachelor degree	1	8%
Doctoral degree	1	8%
Total	13	100%

4.3.2 Library related information needs

This section presents findings that address the research question: What are the library related information needs of NUL humanities undergraduate students in the current digital age? Student respondents were provided with a number of options, as reflected in Figure 4.5, and

were asked to indicate the purpose/s for which they need information from the NUL Library, as humanities undergraduate students. Two hundred and two (202) of the 205 students responded to this item. They could select more than one option and hence the frequency count in Figure 4.5 does not need to total 202 or 100%. Coursework assignments, practicals and projects (149 or 74%) and Preparation for tests and examinations (140 or 69%) emerge (in Figure 4.5) as the dominant purposes for which humanities undergraduate students need information from the NUL Library. None of the respondents selected the 'Other' option.

Figure 4.5: Purposes for which humanities undergraduate students need information the NUL Library (N=202)



Student respondents were further asked to what extent the information needs reflected in Figure 4.5 are met by the NUL Library. It is evident from Table 4.5 that frequencies for 'good' and 'average' are higher for most of the information needs listed. This is also reflected in the simple average calculations in Table 4.5. It is also evident via weighted averages (mean scores)

in the same table, that students' ratings of the extent to which the listed library related information needs are met, are roughly uniform but with information requirements for tests and examinations and for bibliographic referencing enjoying slightly higher weighted averages. None of the respondents selected the 'Other' category in this item.

Table 4.5: Extent to which the NUL Library meets humanities undergraduate students' information needs (N=203)

Students' information needs	Poor	Average	Good	Excellent	total	Weighted average
Coursework reading requirements	23% 39	36% 61	36% 61	6% 11	172	2.26
Coursework assignments, practicals and projects	24% 42	36% 64	30% 53	11% 19	178	2.28
Preparation for tests and examinations	20% 37	30% 55	29% 54	21% 38	184	2.51
Tutorials, seminars and workshops	29% 38	38% 50	21% 28	13% 17	133	2.18
Guidance on bibliographic referencing	21% 31	28% 41	33% 49	19% 28	149	2.50
To learn how to use information databases and other electronic information resources	33% 52	32% 51	25% 40	11% 17	160	2.14
To learn how to locate information sources and resources using the library website	27% 43	34% 54	24% 38	14% 22	157	2.25
Simple average	40	54	46	22	162	

The interviewed librarians were also asked about the library related information needs of NUL humanities undergraduate students in the current digital age, that is, what these students use the NUL Library services for. Table 4.6 provides a breakdown of what the interviewed librarians see as purposes for which humanities undergraduate students use NUL Library services. The top scoring purposes in this table have synergy with that in Figure 4.5.

Table 4.6: Librarians' views on the purposes for which humanities undergraduate student use the NUL Library

Purpose for use of NUL Library	Frequency	Percentage
Information for assignments	10	77%
Information for research projects	9	69%
For general reading/knowledge purposes	5	38%
Preparation for tests	3	23%
For leisure reasons	3	23%
For exam preparation	1	8%

Interviewed librarians were also asked how they thought technology has affected NUL humanities undergraduate students' library related information needs. They indicated that technology has affected students' library related information needs both positively and negatively as reflected in Table 4.7. This is not surprising, given that Figure 4.2 shows the young adult, technology savvy age categories of 18-22 and 23-27 as being the dominant age categories among the student population under study.

Table 4.7: Librarians' views on the impact of technology on humanities undergraduate students' library related information needs (N=13)

Responses from interviewed librarians	Frequency	Percentage
Students find it easy to do online searching for full text articles since they easily 'google' for almost everything	10	77%
E-books, e-journals and online user education have improved online access to meet students' information needs	6	46%
Technology assists students to easily and quickly retrieve and access the library collection because they use the Online Public Access Catalogue (OPAC) and not the card catalogue	4	31%
Searching skills of students have improved as they do not rely heavily on librarians for online searching. They are able to share resources among themselves easily	2	15%
Because of evolving technology, students deal with their assignments in an advanced way using peer reviewed articles from academic databases	1	8%
Subscription to e-resources by the library has enabled students to share and use sources at the same time and they are able to meet their information needs timeously	1	8%
Direct responses from interviewed librarians:		
"Students prefer to use ICTs to find information because they find it time wasting to physically visit the library because most materials are not digitized."		
"Technology on the other hand wastes students' time because they spend much time on computers in the library using social media such as Facebook while others need those computers for academic purposes."		
"Students are now constructive, intelligent and their academic writing has improved because of technology."		
"The problem with this technology is that students can only access e-resources while on campus yet about 80% of students stay off campus and that affects their information needs."		
"Some students do not even know how to use e-resources and take everything from the Internet and use them without acknowledging."		

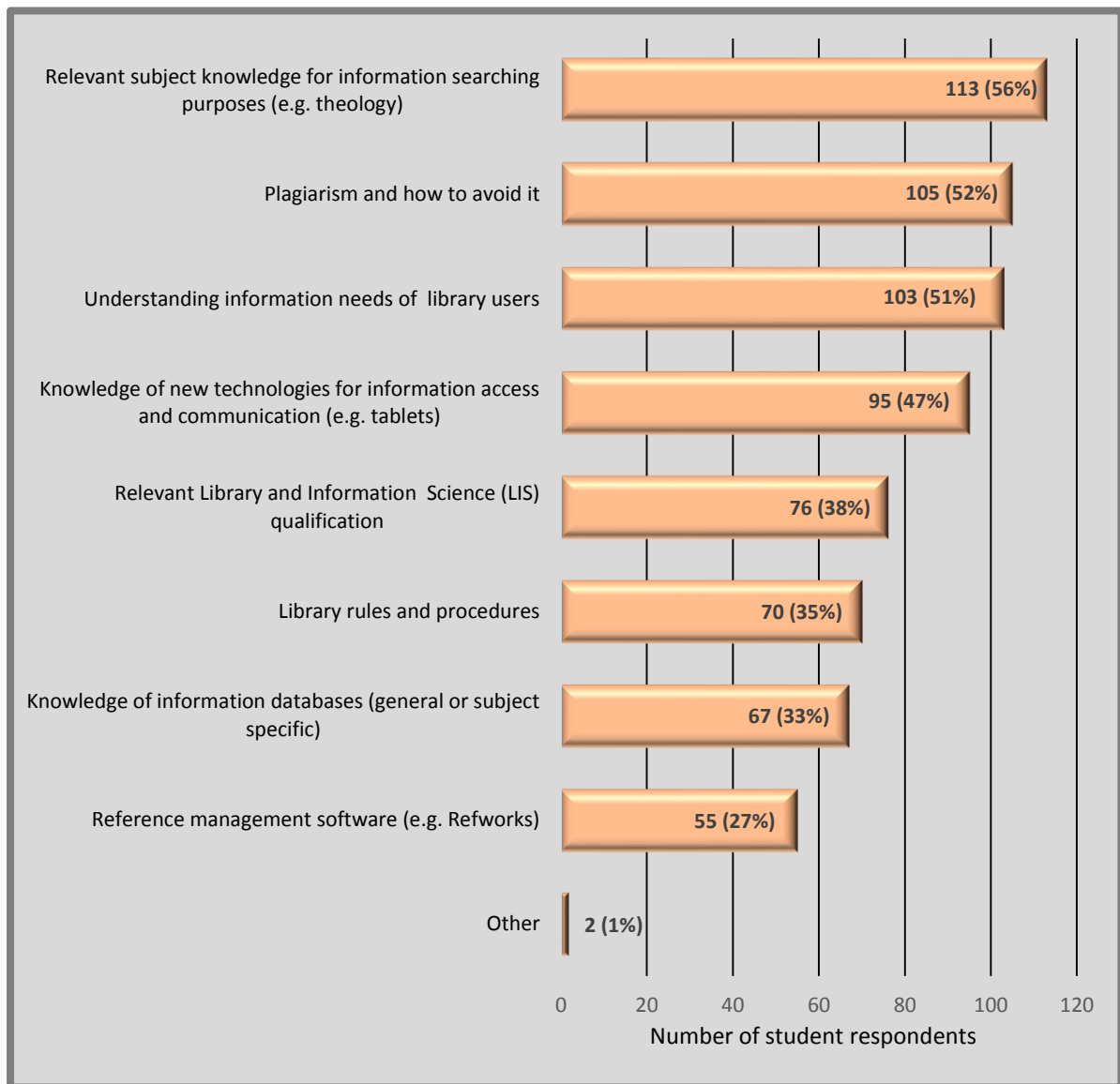
4.3.3 Knowledge and skills requirements for librarians in the current digital age

This section presents findings that address the research question: What knowledge and skills are required of NUL librarians in meeting the library related information needs of humanities undergraduate students in the current digital age?

4.3.3.1 Disciplinary knowledge

Student respondents were asked to indicate (from a list of options provided) what LIS disciplinary knowledge they would expect NUL librarians to possess in order to meet their library related information needs as undergraduate students. Relevant definitions (such as LIS disciplinary knowledge) and examples relating to this item in the questionnaire were provided for clarity and understanding (refer to Appendix C). Of the 205 student respondents, only three did not respond to this item. Figure 4.6 captures the responses. Relevant subject knowledge (113 or 56%), Plagiarism and how to avoid it (105 or 52%) and Understanding information needs of library users (103 or 51%) emerge as the high scoring LIS disciplinary knowledge sets. Of the two respondents who selected 'Other', one mentioned knowledge of Sotho text books while the other did not specify anything.

Figure 4.6: LIS disciplinary knowledge requirements identified by student respondents (N=202)



The librarians interviewed were also asked what disciplinary knowledge they thought is required by NUL librarians to meet the library related information needs of humanities undergraduate students. They were prompted for examples of such disciplinary knowledge. Here too concepts such as disciplinary or professional knowledge were clarified (refer to Appendix B). Responses which are captured in Table 4.8 reveal Information literacy training (mentioned by 11 of the 13 interviewees) and Information management and processing (mentioned by 10 of the 13 interviewees) as the prominent disciplinary knowledge sets identified by the interviewed librarians.

Table 4.8: LIS disciplinary knowledge requirements identified by librarian respondents (N=13)

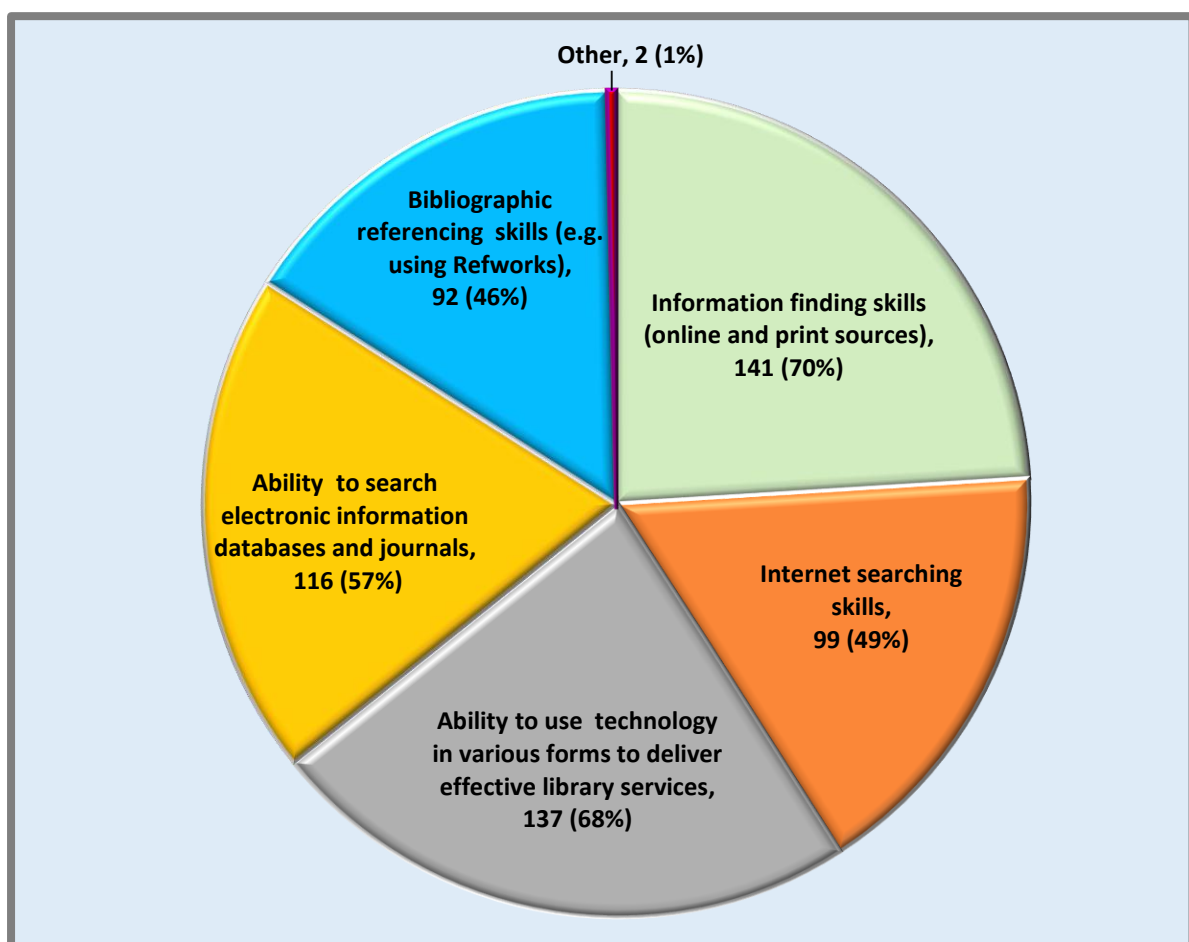
Disciplinary/professional knowledge	Frequency	Percent age
Information literacy training (library orientation, user education, instruction, etc.)	11	85%
Information management and processing (e.g. cataloguing, classification, abstracting, indexing)	10	77%
Knowledge of electronic journals	6	46%
Knowledge of online databases	5	38%
Knowledge of the acquisition process	4	31%
User studies (knowledge of users and their information needs)	4	31%
Knowledge management (e.g. creation, storage, sharing)	3	23%
Relevant subject knowledge (e.g. education, law, computer science)	3	23%
Records and archives management (e.g. creation, collection, storage, retention, retrieval, appraisal, disposal)	3	23%
Digital curation and preservation	3	23%
Knowledge of library automation	2	15%
Knowledge of citation and plagiarism	2	15%
Collection development (print and electronic)	1	2%
Knowledge of database management systems	1	8%
Knowledge of organising and processing online materials	1	8%
Understanding copyright laws and licensing	1	8%
Information repackaging (selective dissemination of information)	1	8%
Knowledge of reference management software	1	8%
Knowledge of library policy (rules and regulations)	1	8%
Library operations (knowledge of each section's functions and responsibilities)	1	8%
Knowledge of publishing	1	8%

4.3.3.2 Disciplinary skills

Student respondents were asked to indicate (from a list of options provided) what LIS disciplinary skills they would expect NUL librarians to possess in order to meet their library related information needs as undergraduate students. Relevant definitions (such as LIS disciplinary skills) and examples relating to this item in the questionnaire were provided for clarity and understanding (refer to Appendix C). Three of the 205 student respondents did not respond to this item. Responses are captured in Figure 4.7. Not surprisingly, it emerges from

students surveyed that Information finding skills (141 or 70%) and Ability to use technology to deliver effective library services (137 or 68%) are critical in meeting the library related information needs of humanities undergraduate students. Two student respondents indicated 'Other' disciplinary skills required by librarians and these were citation skills and the ability to guide students on how to access and retrieve library information sources and resources, both of which were covered by the researcher in the options Bibliographic referencing skills and Information finding skills.

Figure 4.7: LIS disciplinary skills requirements identified by student respondents (N=202)



The librarians interviewed were also asked what disciplinary skills they thought are required by NUL librarians to meet the library related information needs of humanities undergraduate students. They were prompted for examples of such disciplinary skills. Concepts such as disciplinary or professional skills were clarified (refer to Appendix B). The responses are captured in Table 4.9. Ability to teach students to do online searching and Reference

management software skills were identified by more than 50% of the 13 interviewed librarians as required LIS disciplinary skills sets in this context.

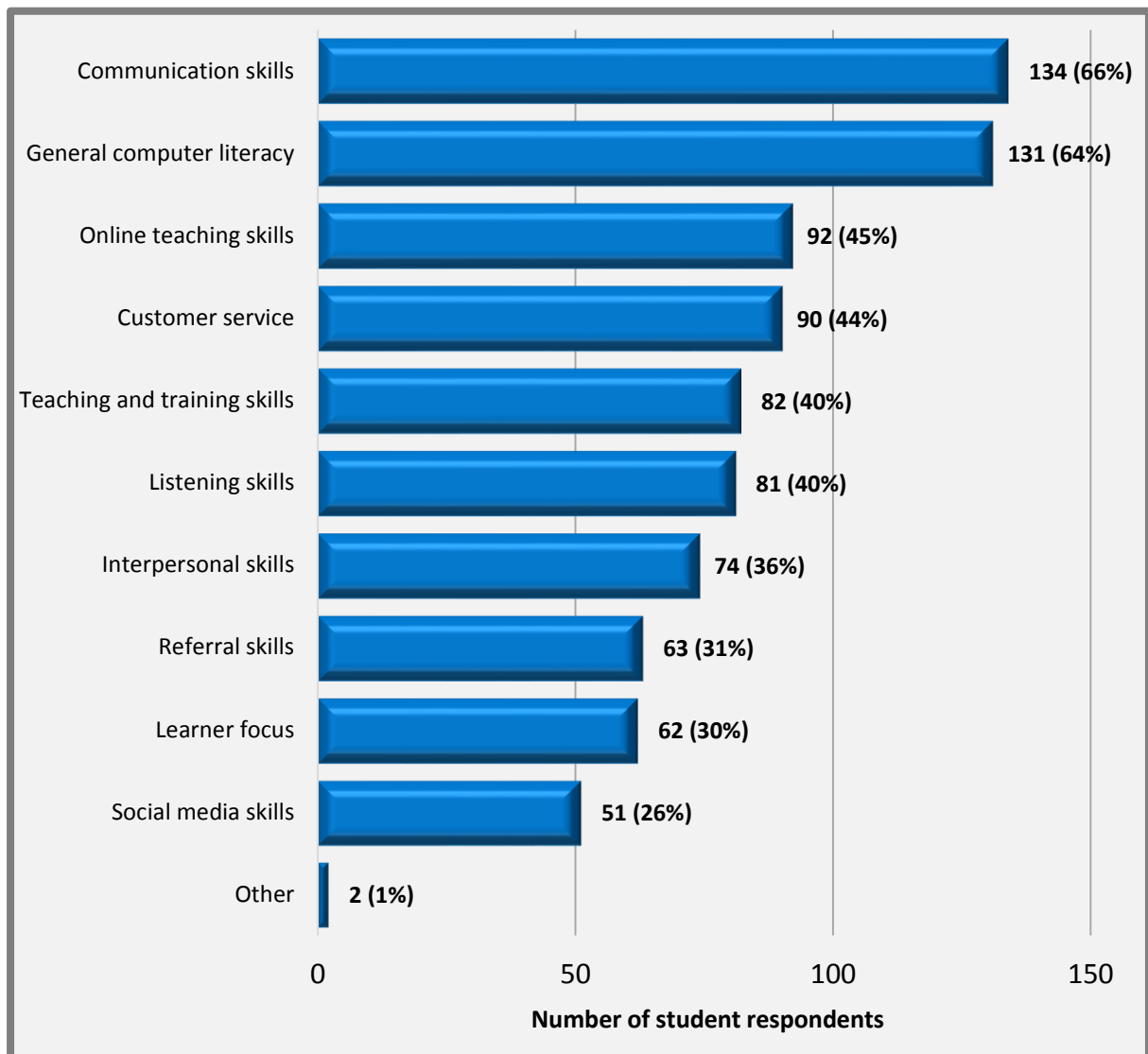
Table 4.9: LIS disciplinary skills requirements identified by librarian respondents (N=13)

Disciplinary/professional Skills	Frequency	Percentage
Ability to teach students to do online searching	7	54%
Reference management software skills	7	54%
Information retrieval skills (print and electronic)	6	46%
Competency in using the library information management system to acquire, process and manage electronic resources	4	31%
Referral skills (attend to queries and refer where necessary without wasting users' time)	2	15%
Skills to catalogue manually	1	8%
Ability to evaluate e-resources	1	8%
Familiarity with the physical collection and its arrangement	1	8%

4.3.3.3 Generic skills

Student respondents were asked to indicate (from a list of options provided) what generic skills they would expect NUL librarians to possess in order to meet their library related information needs as humanities undergraduate students. The concept of generic skills was re-iterated and they could select multiple options (refer to Appendix C). Of the 205 student respondents, only one did not respond to this item. Communication skills (134 or 66%) and General computer literacy (131 or 64%) seem to be the most required generic skills. Figure 4.8 captures these findings. One respondent specified professional skills as the 'Other' generic skill required while the other respondent did not specify anything.

Figure 4.8: Generic skills for librarians identified by student respondents (N=204)



Interviewed librarians too were probed in the same skills area when they were asked what generic skills they thought are required by NUL librarians to meet the library related information needs of humanities undergraduate students. They were asked to provide examples of such skills and these are captured in Table 4.10. Like the students, the librarians too identified Communication skills and Computer literacy (refer to Table 4.10) as key generic skills required by librarians to effectively meet students' information needs. Four librarian respondents emphasized that without communication skills there is "no way" librarians would know or even meet students' information needs. One librarian respondent

commented that “it is very embarrassing for a librarian to be computer illiterate at this stage when everything is done using computers”.

Table 4.10: Generic attributes identified by librarian respondents (N=13)

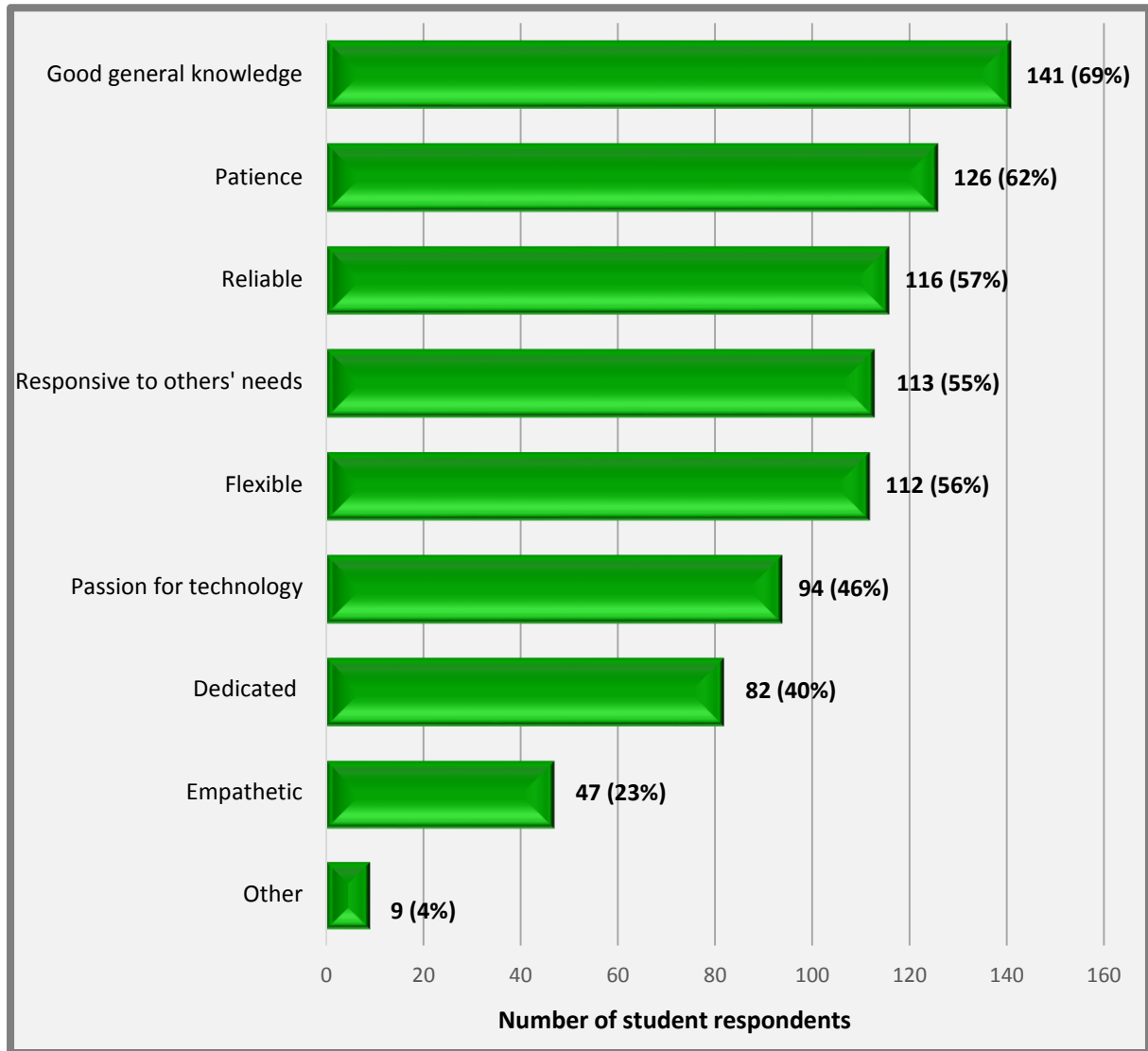
Generic skills	Frequency	Percentage
Communication skills (oral and written)	11	85%
Computer literacy	10	77%
Listening skills	9	69%
Interpersonal skills	7	54%
Marketing skills	6	46%
Management skills	5	38%
Teaching skills (ability to train students)	5	38%
Social media skills	5	38%
Leadership skills	4	31%
Customer care skills	4	31%
Public relations skills	4	31%
Professional ethics	3	23%
Interpersonal relations	2	15%
Problem solving skills	2	15%
Basic research skills	2	15%
Collaborative skills	1	8%
Teamwork skills	1	8%
Presentation skills	1	8%
Counselling	1	8%
Safety skills (ability to use first aid kit, fire extinguishers, etc.)	1	8%

4.3.3.4 Personal attributes

Student respondents were asked to indicate (again, from a list of options provided) what personal attributes (that is, appropriate attitudes, behaviours and values) they would expect NUL librarians to possess in order to meet their library related information needs as humanities undergraduate students. Again, they could select multiple options (refer to Appendix C). All 205 students responded to this item. In Figure 4.9, having Good general knowledge (141 or 69%), not surprisingly, emerges as the outstanding personal attribute identified by student respondents. Nine respondents variously identified being polite,

understanding, respectful, and humble and being enthusiastic as 'Other' personal attributes required.

Figure 4.9: Personal attributes for librarians identified by student respondents (N=205)



Interviewed librarians too were asked what personal attributes they believe are required by NUL librarians to meet library related information needs of NUL humanities undergraduate students. Table 4.11 presents the responses.

Table 4.11: Personal attributes identified by librarian respondents (N=13)

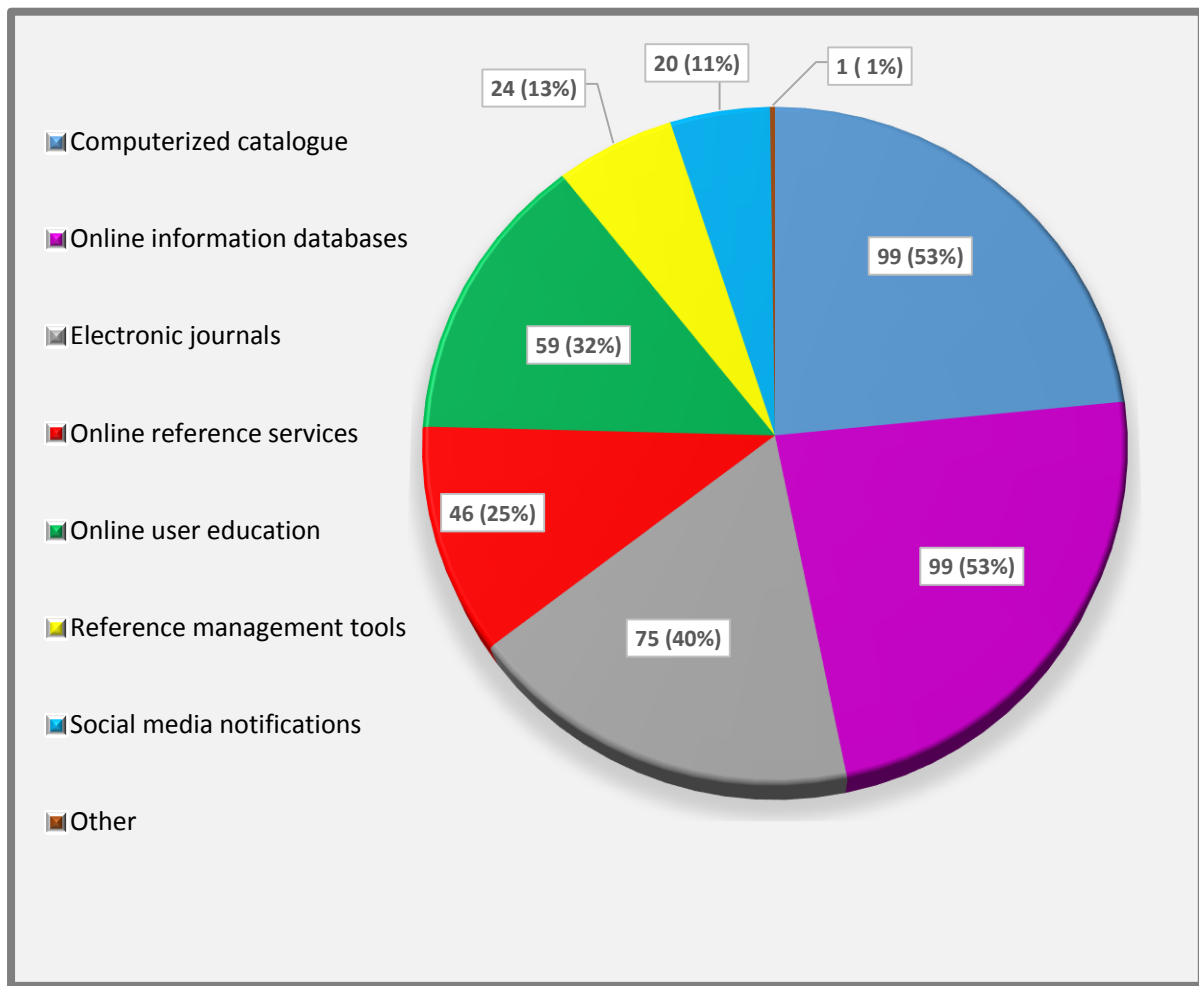
Personal attributes	Frequency	Percentage
Friendly and welcoming	8	62%
Humble	5	38%
Enthusiastic (show interest and willingness to assist)	5	38%
Caring about the needs of others	4	15%
Patience	3	23%
Polite	3	23%
Respectful	3	23%
Confidence	2	15%
Calm	2	15%
Creative	1	8%
Proactive	1	8%
Flexible	1	8%
Ethical	1	8%

4.3.4 Influence of technology on library services

This section presents findings that address the research question: To what extent has technology affected the roles and functions of NUL academic librarians?

Student respondents were asked to indicate from a list of options provided (refer to Appendix C), what new technology has been introduced into the services of the NUL Library. One hundred and eighty seven (187) of the 205 students responded to this item while 18 did not. Not surprisingly, Online information databases (99 or 53%), Computerized catalogue (99 or 53%) and Electronic journals (75 or 40%) feature prominently in Figure 4.10. Only one student respondent selected the 'Other' option but did not specify anything.

Figure 4.10: New technology in library services identified by student respondents (N=187)



When the librarians interviewed were asked if they believe that technology has affected the roles and functions of NUL librarians, all 13 NUL librarians agreed that indeed technology has affected their roles and functions in a big way, both positively and negatively. They were further asked to indicate, with concrete examples, how technology has impacted on the roles and functions of NUL librarians. The latter findings are captured in Table 4.12.

Table 4.12: Impact of technology on the roles and functions of librarians as identified by librarian respondents (N=13)

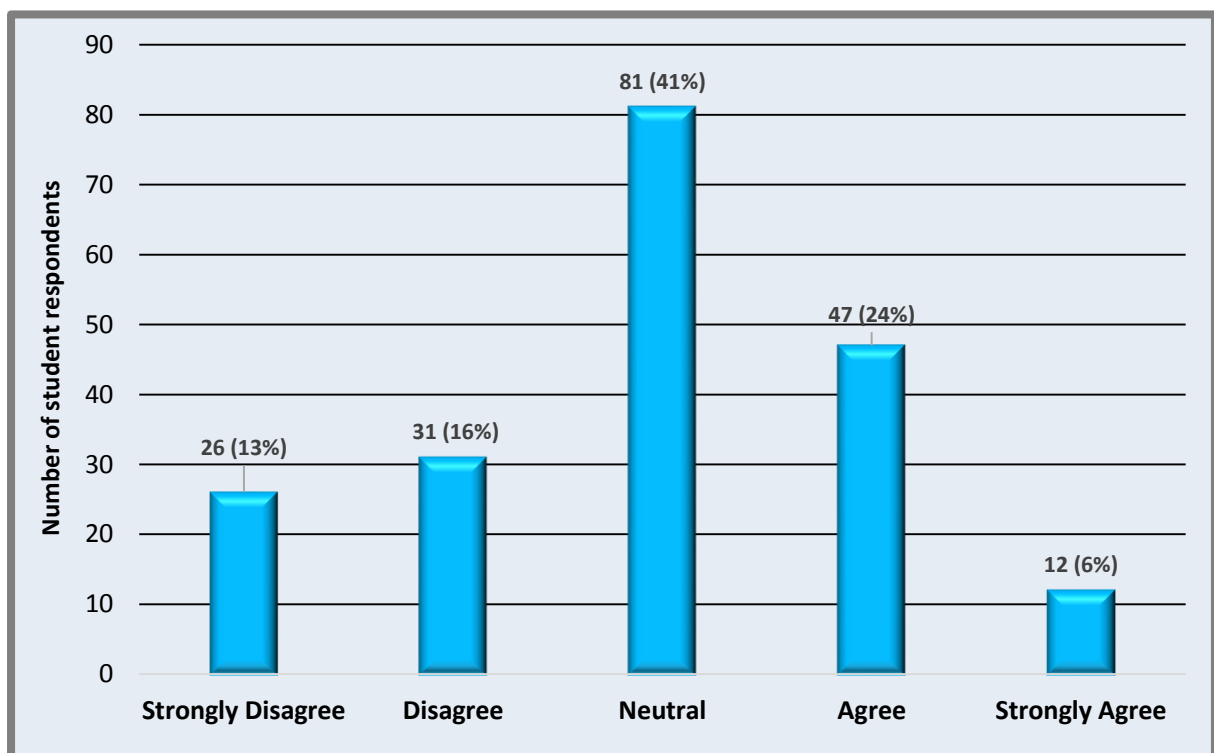
Impact of technology on roles and functions of librarians (responses)	Frequency	Percentage
Library automation – move from card catalogues to online public access catalogue (OPAC)	8	62%
Technology has made it easy to execute daily functions such as issuing, returning, searching and locating information sources	8	62%
Librarians need to acquire more training on ICTs to be functional in the digital era	5	38%
Improved library operations. Services are faster, more accurate and efficient (e.g. cataloguing, online acquisition, etc.)	4	31%
Librarians have become teachers because they are now required to train and demonstrate to the users (e.g. undergraduate students) how to access information sources and resources using new technology	3	23%
Evolving technology has forced the library to digitize and preserve archive materials and special documents so that they are available in digital format for easy access and for posterity	2	15%
Technology has led to the establishment of an institutional repository to publish and preserve NUL's intellectual output	1	8%
NUL librarians are required to acquire ongoing technological training to adapt to changes but some decided to retire because they found it hard to change from traditional systems.	1	8%
Librarians liaise with faculties and inform them of any changes in the library resulting from evolving technology so that faculties understand what is happening in the library	1	8%
There is much confusion brought by technology even though it is important and required	1	8%
Services such as current awareness have improved because of digital communication as they are now reach a wider audience.	1	8%
Technology has divided students and librarians because students prefer to use their own devices rather than come into the library	1	8%
Because of rapid changes brought about by technology, some librarians are left behind as it is difficult to cope with the pace at which technology changes	1	8%
Technology has made staff redundant and idle because it has lessened their workload	1	8%
Librarians cannot completely adapt to the new environment because they have to combine both traditional and digital methods to provide services	1	8%

4.3.5 Adapting to technological changes

This section presents findings that address the research question: To what extent are NUL librarians readily adapting to and embracing technological changes affecting academic library resources and services?

Student respondents seemed to be largely neutral (81 or 41%) whereas a total of 57 (29%) disagreed and an almost equal number of 59 (30%) agreed with the statement that **NUL librarians are embracing technological change in their delivery of resources and services to humanities undergraduate students**. Figure 4.11 captures an almost symmetrical divide among the 197 students who responded to this item.

Figure 4.11: Student respondents' views on NUL librarians embracing technological change (N=197)



Change is inevitable in the digital academic library environment, hence organizational learning purports that librarians of learning organizations such as NUL should embrace and adapt to these changes (Blakiston, 2011: 730). As reflected in Table 4.13, it is encouraging to note that most of the interviewed librarians responded 'yes' when asked if NUL librarians are readily adapting to and embracing technological changes affecting academic libraries'

resources and services. Four (31%), however, had mixed views and responded ‘partly yes, partly no’ while only one interviewee responded ‘no’ to the question. Table 4.13 also captures responses to the question posed to interviewed librarians on how NUL librarians are embracing technological changes.

Table 4.13: Librarian respondents’ views on NUL librarians adapting to technological changes (N=13)

Response	Explanations for response	Frequency	Percentage
Yes	Willingness of staff to attend training on evolving technology	8	62%
	When the system is down, staff do not provide services using the manual system but rather wait until the problem is resolved	7	54%
	When students enquire about information, librarians do not only tell them about print materials but also show them how to use e-resources (e.g. exam papers available in digital format)	6	46%
	Librarians use computers to do most duties (e.g. catalogue, classify, order, locate, issue, returns)	6	46%
	The library engages IT specialists whenever the system fails or shuts down. There are IT specialists on standby to assist with technological problems	4	31%
	Librarians train students to become part of the digital change taking place in the library	3	23%
	The library has recently upgraded its information management system and purchased a technologically advanced system to meet users’ needs	2	15%
	Digitization of archives section of the library	2	15%
	Advertisements and announcements of library services are done through online collaborative and learning environment that supports the academic community in teaching, learning and research	2	15%
	Implementation of Wi-Fi network in the library as a way of encouraging students to frequently	1	8%

	come to the library for online services and queries.		
	Opening of two Internet cafès inside the library (one uses cable network and the other is a 24 hours service that uses only Wi-Fi)	1	8%
	“There is no way they [NUL librarians] cannot accept technology because nowadays everything is electronic. They are adapting to the digital era.”	1	8%
Partly yes partly no	“They [NUL librarians] seem ready to move with changes but there are those who are resisting because they feel technology is side-lining them.”	1	8%
	“They [NUL librarians] are accepting it but there are those who don’t seem keen to learn more about these changes.”	1	8%
	“It is hard to say whether they [NUL librarians] are accepting or resisting because technology is there and they have no option but to catch up with the changes.”	1	8%
	“They [NUL librarians] might be resisting, not because they do not want technology but because of the way it is introduced to them. The approach is not good.”	1	8%
No	“Some decided to retire from work because of technological changes and the fear of the unknown.”	1	8%

The following question was put to librarian respondents only: if NUL librarians are not readily embracing technological changes, what are the challenges to this? (refer to Appendix B, item 21). The responses are captured in Table 4.14. Eleven out of the 13 librarian respondents cite lack of or insufficient training. Three of these 11 interviewees claimed that even if training is provided, it is mostly insufficient, and that makes lack of training a major shortcoming in the library. One librarian cogently remarked that “as long as technology exists in libraries, there will always be challenges whether we are readily embracing it or not”.

Table 4.14: Librarian respondents' views on challenges the NUL Library and librarians are Facing (N=13)

Challenges	Frequency	Percentage
Lack of/insufficient training	11	85%
Coping with rapid changes such as changing from old to new library system (incompatibility of the systems)	8	62%
Shortage of staff that leads to inefficiency in service provision	7	54%
Insufficient equipment (shortage of modern equipment)	6	46%
Shortage of skills to comprehensively operate in the digital environment (e.g. digitization, copyright and licensing issues. digital preservation)	4	31%
Lack of infrastructure (e.g. narrow bandwidth, power failure)	3	23%
NUL Library is lagging behind rapid changes as compared to its counterparts in Africa and globally	2	15%
Traditional training acquired many years ago	1	8%
Resistance to change as a result of, for example, age	1	8%
Funding challenges (financial constraints, little subvention from government)	1	8%
Lack of benchmarking to identify the library's shortcomings and to efficiently make the necessary changes	1	8%

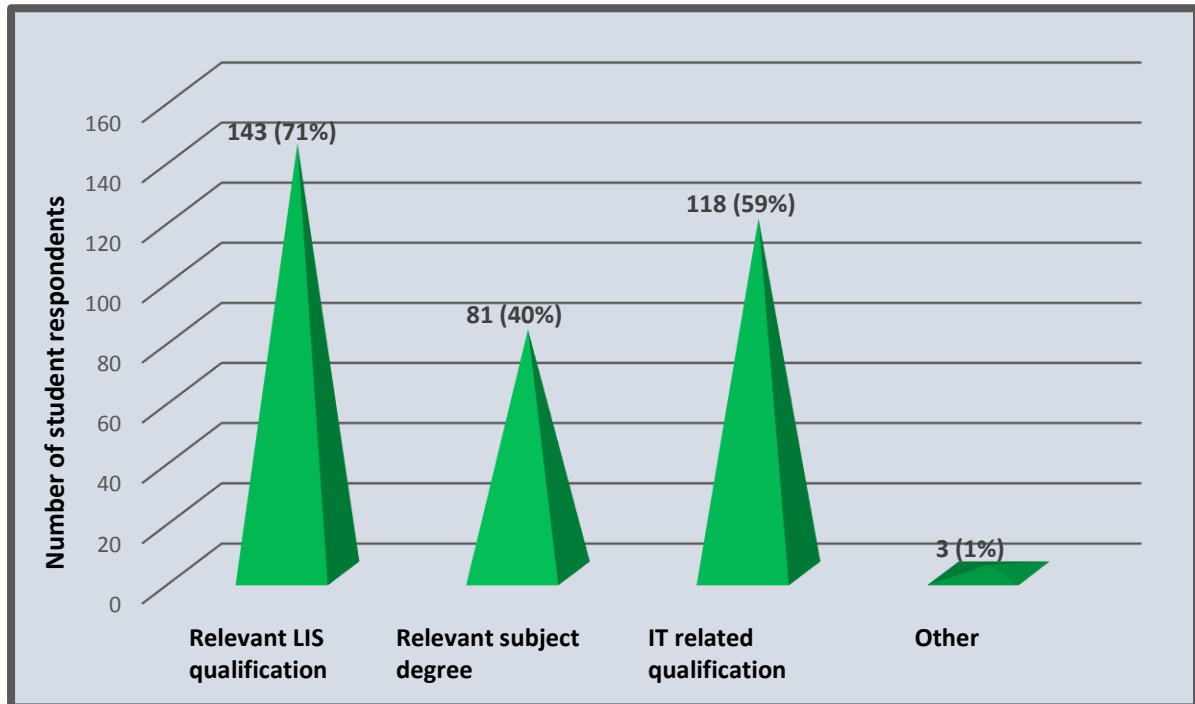
4.3.6 Education and training

This section presents findings that address the research question: What type of education and training are required for NUL librarians to effectively meet the information needs of humanities undergraduate students in the digital age academic library environment. Both students and NUL librarians responded to questions regarding education and training of NUL librarians (see Appendices B and C).

Student respondents were presented with a list of options (as listed in Figure 4.12) and asked what qualification/s they believe NUL librarians should possess. They could select more than one option. Only four of the 205 students did not respond to this item. While LIS qualification was selected by 143 (71%) of the 201 students, considering the pervasive impact of ICTs on the LIS environment, it is not surprising that IT related qualification notched up a high frequency count of 118 (59%). With the NUL Library servicing an academic and research environment, it is also not unexpected that a subject degree was considered important by a

significant 40% of the students surveyed. The 'Other' option was selected by three students, but they did not specify any qualifications.

Figure 4.12: Student respondents' views on NUL librarians' qualifications (N=201)



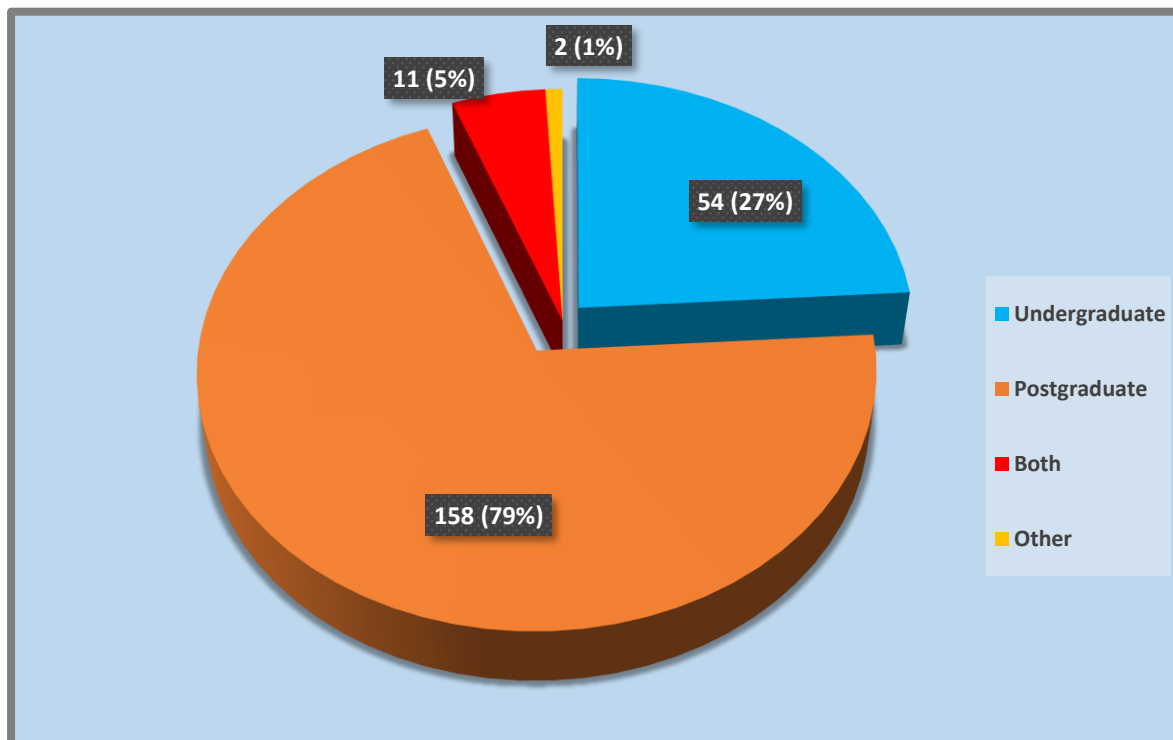
It is common in the higher education LIS sector to find practitioners with a combination of qualifications and Item 13 in the student questionnaire (see Appendix C) was designed with this in mind. Table 4.15 shows these combinations. It would appear that a number of students (79 or 39%) of the 201 who responded to this item, did select a combination of qualifications. Not unexpectedly, considering the digital age academic library environment as well as the dominant age range among the surveyed students (young adults who are technology savvy), the 'LIS plus IT related qualification' combination emerges with a frequency count of almost 50%.

Table 4.15: Student respondent's combination for NUL librarians' qualifications (N=79)

Relevant Qualification	Frequency	Percentage
Relevant LIS qualification, IT related qualification	39	49%
Relevant LIS qualification, Relevant subject degree and IT related qualification	24	30%
Relevant LIS qualification, Relevant subject degree	11	14%
Relevant subject degree, IT related qualification	5	6%

Humanities undergraduate students were also asked what level of education they think NUL librarians should possess in order to assist them with their information needs. Again, only four students did not respond. According to Figure 4.13, an overwhelming 158 (79%) of the students surveyed indicated postgraduate while 54 (27%) selected the undergraduate option (refer to Appendix C). Two students selected the 'Other' category with one specifying 'secondary education' and the other specifying 'professoriate'. While respondents in this question should not have selected more than one option, a few seem to have done that and hence the frequencies do not total to 201 or 100%. Notwithstanding this, the trend in favour of the postgraduate level is still evident.

Figure 4.13: Student respondents' views on level of education for NUL librarians (N=201)



When librarians interviewed were asked what type of education and training they think is required to effectively meet the library related information needs of humanities undergraduate students in the digital age, all 13 of the interviewees emphasized that a LIS qualification is the most desirable. However four of the 13 specified that it would be more useful if librarians could obtain a first degree in other subjects (e.g. law, engineering, health, etc.) and acquire the LIS qualification at the postgraduate level in order to become subject specialists. One librarian commented that it would be easier for librarians with a relevant subject degree to understand students' needs and that they would be in a better position to assist them because of their knowledge of a particular subject.

As elaboration, interviewed librarians were prompted on formal and informal education training. Table 4.16 lists the formal degree qualifications mentioned. One respondent, emphasizing the need for a degree qualification stated: "We feel like we are not competent enough to fulfil students' needs because we only have a diploma and we assist people who are doing degrees". Of the 13 respondents, only five mentioned master's in LIS as a required level. Another respondent who indicated master's commented that since most undergraduate programmes at NUL offer degrees (where students are engaged in research

projects), it would be satisfactory for librarians to have master's so that they can assist students with research skills, which diploma holders might not have.

With regard to informal training, it would seem that NUL librarians are keen to attend training on ICTs and new areas regarding technology. All 13 librarians agreed that both formal and informal training are required for NUL librarians. The librarian respondents preferred if informal training could be done via workshops, seminars, conferences and, most importantly, hands-on training to acquire practical skills. One respondent highlighted that librarians need teaching skills because teaching is part of librarians' main duties. While emphasizing the importance on informal training, an interviewee affirmed that customer care training should be provided on an ongoing basis because it cannot be separated from librarianship. It is encouraging to observe in Table 4.16 that librarians are ready to employ both old and new methods of learning (online and contact) for organizational effectiveness; hence single and double loop learning (Wijnhoven, 1995: 260; Arias & Solana, 2013: 704), involving simple and complex learning methods, are embraced for the NUL Library to adapt to changes.

Table 4.16: Formal and informal education and training for NUL librarians (N=13)

Education and training required		Frequency	Percentage
Formal education and training	Degree in LIS	6	46%
	Master's in LIS	5	38%
	Diploma in LIS	2	15%
	Subject degree (lower degree)	4	31%
Informal training (ongoing)	Basic ICTs, computer skills and evolving technologies (hands-on)	10	62%
	Marketing (online platforms)	5	15%
	Teaching (online and contact)	4	15%
	Customer care	3	23%
	Training of trainers	1	8%

4.3.7 General comments

At the end of each interview, librarian interviewees were asked if they had any questions or comments relating to the issues covered in the interview. Most librarians indicated that they had no comments except for one who asked the researcher why the study focused on humanities students. The researcher explained that the Faculty of Humanities was selected as the study's research site because it was convenient for the researcher (as a humanities student) to conduct the study with this faculty – hence the use of humanities students. Two of the interviewed librarians remarked that the researcher has made them aware that the NUL Library lacks some relevant knowledge and skills to meet students' information needs generally. One librarian remarked: "after this interview, you have opened my eyes and I now realise that there is so much that NUL Library has to do. Even me as a person, I can see that I lack so much knowledge. You have really winded me".

4. 4 Summary

Chapter 5 presented the findings of the study based on the research questions guiding the study. The findings emanated from analysis of data collected from NUL librarians by means of semi-structured face-to-face interviews and humanities undergraduate students via a self-administered structured questionnaire, to ascertain what knowledge and skills are required of NUL librarians to meet the information needs of undergraduate students in the digital age. This chapter highlighted the three categories of competencies: discipline-specific knowledge and skills, generic skills and personal attributes as the core competencies required by LIS professionals in the digital age academic library to meet users' evolving information needs. It further presented the findings of the impact of technology on librarians' roles and the type of education and training required to adapt to changes. The next chapter discusses the main findings in terms of the study's objective and its research questions, the organizational learning theory informing the study and the literature reviewed for the study.

Chapter 5: Discussion of main findings, conclusions and recommendations

5.1 Introduction

Chapter 4 presented findings from the analysis of data collected via face-to-face semi-structured interviews conducted with purposively selected NUL librarians and a structured questionnaire administered to a sample of NUL humanities undergraduate students. This chapter discusses the main findings in response to research questions generated to address the study's research objective. This is done in the context of the literature reviewed for the study and organizational learning theory which informed the study. Based on this discussion, conclusions are drawn and recommendations are made.

As outlined in Chapter 1, the main objective of this study was to ascertain what knowledge and skills are required of NUL librarians to meet the information needs of humanities undergraduate students in the digital era academic library environment. The study research questions (refer to Section 1.5 of Chapter 1), informed by organizational learning theory (Argyris & Schon, 1978: 2; Arias & Solana, 2013: 704), were generated to address this objective.

5.2 Discussion of findings

Main findings are discussed in order of the research questions listed in Section 5.1 and as already mentioned, the generation of these research questions was informed by organizational learning theory.

5.2.1 The library related information needs of NUL humanities undergraduate students in the current digital age

Information is crucial and needed in all spheres of life. A need for information is a 'factual situation' (Prasad, 2000: 8) which information providers must be aware of in order to gratify it. Coursework assignments, practicals and projects and Preparation for tests and examinations emerged as the top scoring purposes (see Figure 4.5 of Chapter 4) for which humanities undergraduate students need information from the NUL Library. This finding is supported by findings from interviews with NUL librarians (10 of 13) and (9 of 13) of whom indicated that assignments and projects, respectively (see Table 4.6), are the main purposes

for which students have a need for information from the NUL Library. And it would seem that the NUL Library is, to a fair extent, meeting these information needs of the students as the majority of the students surveyed selected 'average' and 'good' (see Table 4.5) when they were asked to what extent the NUL Library meets their library related information needs. At the same time, the selection of 'average' by many students and the lower frequency score for 'excellent' (see simple average scores in Table 4.5) are indications that there is room for improvement by the NUL Library in meeting the information needs of humanities undergraduate students. This has implications for the knowledge and skills that NUL librarians currently possess for purposes of meeting the information needs of these students.

Despite Table 4.4 showing that almost 50% of the interviewed librarians have master's degrees in LIS, it would seem that further knowledge and skills development is required in order for NUL Librarians to meet the information needs of humanities undergraduate students to a greater extent. For example, Table 4.5 shows relatively lower weighted average scores for meeting students' information needs for Tutorials, seminars and workshops and To learn how to use information databases and other electronic information resources. Thus, for the NUL Library to become an effective learning organization (that is, an organization that comprehends and adapts to its constantly changing environment (Blakiston, 2011: 729; Arias & Solana, 2013: 704) librarians should continuously identify purposes for which students need information from the NUL Library, transfer that knowledge within the organization (Argyris & Schon, 1978: 17) and adapt to new technologies through speedy learning (Blakiston, 2011: 730) in order to meet fast changing user demands (Barner & Tal, 2012) in the digital academic library environment.

All 13 librarians pointed out that technology has affected students' library related information needs both, positively and negatively (see Table 4.7). Bawden, Vilar and Zabukovec (2005: 88) point out that users tend to rely on 'Google-like' searching for "all information" required. This observation in the literature concurs with the finding in this study that most of the NUL librarians interviewed (10 out of 13 or 77%) indicated that students now find it easy to do online searching for full text articles since they simply 'google' for almost everything. This is not surprising, given that Figure 4.3 shows the young adult, technology savvy (Biswas, 2009:

133) age categories of 18-22 and 23-27 as being the dominant age categories among the student population surveyed. It makes sense, based on these findings, why the extent to which technology related information needs are being met by the NUL Library (that is, learning how to use information databases and other electronic information resources) were rated as 'poor' by most students in Table 4.5 (52 out of the 160 who responded or 33%). However, it is nevertheless worrying, because a learning organization such as the NUL Library (Blakiston, 2011: 730) should be working hard to enhance such services to adapt to changes brought about by advancing technology in order to respond to changes in users' information seeking behavior prompted by technology.

This angst is justified by observations in the literature where Cooke (2012: 1) purports that evolving technologies have led to more intricate information needs, and as a result, claims Patel (2012: 1), librarians should adapt to evolving needs of users. Furthermore, it was surprising that none of the librarians interviewed (see Table 4.6), despite working in the digital age academic library environment, mentioned any technology related information needs such as use of electronic information resources such as databases or use of bibliographic reference management tools (for example, *Refworks*), when asked about the purposes for which humanities undergraduate students use the NUL Library. This means that although NUL librarians are generally meeting students' library related needs, they still have some way to go to fully adapt to evolving needs of users (Patel, 2012: 1), as pointed out earlier in this section.

In summary, NUL humanities undergraduate students use the NUL Library for information for a variety of academic purposes, the most notable being for completion of Coursework assignments, practicals and projects and for Preparation for tests and examinations. Although it would seem that students' library related information needs are to a certain extent being met by the NUL Library, the range of 'not so impressive' weighted averages or mean scores in Table 4.5 from 2.14 to 2.51 (out of 4), are an indication that NUL librarians needs to develop their knowledge and skills by engaging in effective learning to more fully meet the information needs of NUL humanities undergraduate students.

5.2.2 Knowledge and skills required of NUL librarians to meet the library related information needs of humanities undergraduate students in the current digital age

As evident in the literature (Partridge & Hallam, 2004: 3; Orme, 2008: 630; Nonthacumjane, 2011: 286; Haddow, 2012: 244; Raju, 2014: 169) and reflected accordingly in Section 4.3.3 of Chapter 4 of this study, a blend of competencies (disciplinary, generic and personal) are required for 21st century LIS professionals practising in the digital academic library environment. Hence this discussion is also divided into these competency categories.

5.2.2.1 Disciplinary knowledge and skills

While the terms 'knowledge' and 'skills' are at times used interchangeably as sometimes it is difficult to separate these two concepts, for the purposes of this study 'knowledge' was used to refer to theory stored in one's mind whereas 'skills' was used to refer to the ability to apply that knowledge appropriately and to obtain expected results (Chartered Institute of Personnel and Development, 2006: 28). While data relating to these concepts were collected, analyzed and presented separately (for clarity and understanding), in this final chapter, discussion of main findings relating to disciplinary knowledge and skills is presented in an integrated manner.

Student respondents indicated Relevant subject knowledge for information seeking purposes, Plagiarism and how to avoid it and Understanding information needs of library users as the top LIS disciplinary knowledge sets required of NUL librarians (see Figure 4.6) to meet their library related information needs. In terms of disciplinary skills, students surveyed indicated that Information finding skills and Ability to use technology to deliver effective library services are critical LIS disciplinary skills, amongst other technology related disciplinary skills, required of NUL librarians in meeting the library related information needs of humanities undergraduate students (see Figure 4.7). The high frequency scores for technology-based disciplinary skills by student respondents may be regarded as an awareness 'tip off' to librarians on what is expected of them in the digital academic library environment. Further, unlike with LIS disciplinary knowledge, students seem to recognize more easily LIS disciplinary skills required of their librarians perhaps because skills are more 'visible' compared to knowledge. Thus, the ability of librarians to impart knowledge and skills, through

demonstrating or training students on how new technology is used to access information, is an indication of the extent to which NUL librarians are engaged in some kind of learning (Argyris & Schon, 1978: 18) or training in an attempt to adapt to changes in order to meet students' library related information needs.

Most of the librarian respondents (11 out of 13 or 85%), as tabulated in Table 4.8, identified Information literacy training and 10 out of 13 identified Information management and processing (for example, cataloguing, classification, abstracting, indexing) as the top most disciplinary knowledge sets required; showing the enduring importance and relevance of traditional LIS knowledge sets in the digital age (Mathews & Pardue, 2009: 257). With regard to disciplinary skills, Ability to teach students to do online searching, Reference management software skills and Information retrieval skills (print and electronic) (see Table 4.9) were at the top of the list of disciplinary skills required of NUL librarians mentioned by librarians who were interviewed. In comparing disciplinary knowledge and skills identified by student respondents to the ones identified by interviewed librarians, based on the high frequency scores, it would seem that librarians' knowledge of Information literacy training (see Table 4.8) and Ability to teach students to do online searching (see Table 4.9) could have influenced the high frequencies in the disciplinary knowledge and skills requirements identified by student respondents (see Figure 4.6 and Figure 4.7). Therefore, it makes perfect sense, for example, for students to place emphasis on Information finding skills as a required disciplinary skill for librarians if, for librarians, the Ability to teach students to do online searching is a priority disciplinary skill set. Hence there seems to be some correlation with important disciplinary knowledge and skills sets between the views of surveyed students and interviewed librarians.

However, there are also areas of disjuncture. For example, only a small number of librarians (3 out of 13 or 23%) indicated Relevant subject knowledge as a required knowledge set yet student respondents (113 of 202 or 56%) indicated it as the most required. It is also observed in Figure 4.7 and in Table 4.9 that most disciplinary skills indicated by student respondents were not mentioned by interviewed librarians. This is an indication that NUL librarians may not always be fully cognizant of what disciplinary knowledge and skills are required of them

by students. Hence the need for a learning organization such as the NUL Library to adopt organizational learning theory in order to determine the type of learning (Wijnhoven, 1995: 256) needed by the NUL Library so as to effect change to librarians' 'learning norms' in order to more fully meet students' library related information needs.

It is of concern that most students did not view Knowledge of new technologies for information access and communication, and Knowledge of information databases (see Figure 4.6), which might be considered 'core' in a digital age academic library as technology has had a major traction in academic libraries (Riley- Huff & Rholes, 2011: 135), as critical LIS disciplinary knowledge for NUL librarians to possess. Hence a need for vigorous marketing of digital services by the NUL Library to draw students' attention to their services so that they become aware of what technology related services and resources exist in the library. Marketing of library services could also allow librarians to learn more about students' needs, simultaneously decreasing the disjuncture mentioned earlier. With marketing campaigns NUL, as a learning organization, would be trying to detect and correct errors (such as the disjuncture between librarians' and students' perceptions) and obtain feedback (Argyris, 1976: 363) from students since feedback is critical in a learning organization to making decisions on the best learning method(s) that the NUL Library could employ for itself in order to meet students' library related information needs.

Disciplinary knowledge, acquired through professional LIS qualifications, is important and remains valuable in the digital academic library environment (Raju, 2016: 12). Almost half of the 13 interviewed librarians hold master's degrees in LIS (see Table 4.4) which is a good sign of highly qualified and professionally competent LIS staff in the NUL Library. It is also interesting to observe in Table 4.3 that the majority (9) of the 13 interviewed librarians have been employed in a professional capacity in an academic library (NUL or elsewhere) for more than 10 years – an indication that professional LIS knowledge, skills and experience are in abundance in the NUL Library. This finding suggests that NUL librarians possess both traditional and modern LIS competencies and that they are equipped with extensive organizational knowledge. NUL librarians should use this advantage to resolve challenges of disjuncture mentioned earlier by applying the knowledge and skills they possess

appropriately to turn the situation around and bridge existing gaps between them and students to ensure that the NUL Library becomes an effective learning organization. The NUL Library, through the support of organizational learning, can make significant transformation to adapt, survive and succeed in the new digital age (Schwandt & Marquardt, 2000: 3).

It would seem then that Relevant subject knowledge for information seeking purposes, Plagiarism and how to avoid it, Understanding information needs of library users, Information literacy training, Information finding skills, Ability to use technology to deliver effective library services, Information management and processing skills (such as cataloguing, classification, abstracting and indexing), Ability to teach students to do online searching, Reference management software skills and Information retrieval skills (print and electronic) are among the more critical disciplinary knowledge and skills required of NUL librarians to meet students' library related information needs (as identified by librarians and students surveyed). While there is some correlation between librarians and students surveyed on disciplinary knowledge and skills required on the part of NUL librarians in meeting the library related information needs of humanities undergraduate students, there also exists some disjuncture between students' and librarians' perceptions of disciplinary knowledge and skills required of librarians for this purpose. Thus the NUL Library is encouraged to engage in vigorous learning and marketing initiatives to make students aware of the technology related services they provide. Hence a need for organizational learning support for NUL librarians to become competent in accomplishing their tasks such as marketing of services whilst reflecting on them to learn from them (Argyris and Schon, 1978: 10) in order to make a significant transition to adapting to technological changes in the academic library environment.

5.2.2.2 Generic skills

Communication skills emerged as the most required generic skills set for NUL librarians among both surveyed students and interviewed librarians (see Figure 4.8 and Table 4.10). NUL librarians interviewed emphasized that communication is 'key' in an academic library environment, and that without it there is "no way" librarians would meet ever changing students' information needs. This common finding with both respondent groups is also reiterated in the literature by number of studies (Gerolimos & Konsta, 2008: 695; Orme, 2008:

629; Partridge, Lee & Munro 2010: 327; Nonthacumjane, 2011: 284; Raju, 2014: 169) which have repeatedly reflected communication skills as a commonly sought generic skill among librarians (Orme 2008: 629).

It is not surprising, given the current digital academic library environment as well the young, technology savvy (Biswas, 2009: 133) age categories of the student respondents, that librarian and student respondents alike placed General computer literacy as the second most required generic skills set for NUL librarians at 64% (131 out of 204 students) and 77% (10 out of 13 librarians), respectively. Other generic skills that have been identified by librarians and students as being critical for LIS professionals include, Listening skills and Interpersonal skills (see Figure 4.8 and Table 4.10). Online teaching skills, Customer service, Marketing skills, Management skills, Teaching [and training] skills, Social media skills also notched up noteworthy frequency counts (see Table 4.10). This table also reflects key trends from the literature relating to generic skills requirements for LIS professionals in the digital academic library environment (Partridge & Hallam, 2004: 5; Orme, 2008: 626; Han & Hswe, 2010; Nonthacumjane, 2011: 284; Raju, 2014: 165; Raju, 2016: 8). However, as much as generic skills are important in the LIS profession, they are not the core disciplinary skills required but they do augment professional skills (Riley-Huff & Rholes, 2011: 138). Studies by Sreenivasulu (2000), Partridge & Hallam (2004), Missingham (2006), Orme (2008), Nonthacumjane (2011) and Raju (2014) also suggest that although generic skills are very important in the digital information environment, they do not displace professional skills as these are still valued in the LIS workplace. Hence, organizational learning advocates that organizations such as the NUL Library should apply generic skills such as critical thinking and decision making (Argyris, 1976: 363) to adapt to changes and meet information needs of students in the digital academic library.

5.2.2.3 Personal attributes

The literature reveals that 21st century librarians require a wide range of skills inclusive of behavioural or personal competencies (Partridge et al., 2010: 265; Nonthacumjane, 2011: 283; Shongwe & Ocholla, 2012: 2; Ezema, Ugwuanyi & Ugwu, 2014: 17; Raju, 2014: 163). The findings of this study, too, show an increasing demand for personal attributes to augment

professional or disciplinary skills. In Figure 4.9, having Good general knowledge (141 out of 205 or 69%), not surprisingly, emerges as the outstanding personal attribute identified for their librarians by student respondents. It would seem that students need librarians who have a broad base of knowledge and who are 'ever ready' to attend to all their queries, including general ones and not only library related queries. Librarians interviewed, however, place Being friendly and welcoming (8 out of 13 or 62%) at the top of their list of required personal traits (see Table 4.11).

Student and librarian respondents (see Figure 4.9 and Table 4.11) also identified behavioral traits such as Patience, Reliable, Responsive to others' needs and being Flexible for contemporary LIS professionals practising in the digital age academic library. In Haddow's (2012: 244) study, adaptability was identified as one of the crucial personal attributes required for LIS professionals in the digital age academic library environment. It was disappointing to note that none of the librarian respondents brought up adaptability as a required personal attribute despite the emphasis by organizational learning theory that adaptability is critical and relevant in a changing environment (Marquardt, 1996: 1). In addition, Blakiston (2011: 730) asserts that unless organizations constantly adapt to the ever-changing environment through "speedy, effective learning, they will die".

To sum up the discussion in Section 5.2.2, a blend of competencies (disciplinary, generic and personal) is required for NUL librarians to effectively practise in the digital academic library environment. It is evident from the literature (Orme, 2008; Partridge et al., 2010; Nonthacumjane, 2011; Raju,2014) that while all three categories are important in the digital age LIS environment, disciplinary knowledge and skills tend to lead, followed closely by generic skills with personal attributes always coming third.

5.2.3 The extent to which technology has affected the roles and functions of NUL academic librarians

A significant 53% of student respondents indicated both Online information databases and the Computerized catalogue as the most recognized new technology introduced into the services of the NUL Library (see Figure 4.10). It is very evident from frequency counts in Figure 4.10 that rapidly evolving ICTs have affected the roles and functions of NUL librarians.

Interviewed librarians confirmed this trend, that is, that the NUL Library has incorporated technology into its service and resource offerings. All interviewed librarians were emphatic that technology has affected their roles and functions but both in positive and negative ways, as reflected in Table 4.12. One librarian respondent stated that although technology has brought “much confusion” in libraries, it is important and required in the digital age academic library to meet the information needs of students. Partridge et al. (2010: 266) purport that the role of libraries has not changed but the nature of services they provide has, and according to Musangi (2015: 183) this is because of the new digital tools incorporated in academic libraries.

It would seem that student respondents share the same sentiments as librarian respondents with regard to the positive impact of technology on the roles and functions of librarians. For example, while student respondents recognized the introduction of Online information databases and the Computerized catalogue, librarian respondents spoke of Library automation making possible a shift from the card catalogue to the online public access catalogue (OPAC) and that the incorporation of technology into NUL Library’s services has made it easy for librarians to execute their daily functions. It would seem then that technology has significantly affected the roles and functions of NUL academic librarians, as perceived by both students and librarian respondents, whether positively or negatively. These technological changes taking place at the NUL Library are an indication that the NUL library has, to some extent at least, engaged organizational learning in its service provision (Marquardt, 1996: 1).

5.2.4 The extent to which NUL librarians are readily adapting to and embracing technological changes affecting academic library resources and services

Blakiston (2011: 730) alleges that change is inevitable in the digital academic library environment, and hence in terms of organizational learning librarians of learning organizations such as the NUL Library should embrace and adapt to these changes (Argyris & Schon, 1978: 10). When asked if NUL librarians are readily embracing technological changes the majority of students who responded to this item (41%) took a neutral position and the rest split between agreeing (30%) and disagreeing (29%) with the statement (see Figure 4.11) – an indication of some uncertainty among students as to whether NUL librarians are readily

embracing technological change in the delivery of resources and services to humanities undergraduate students. This serves as a further pointer for more work that needs to be done by NUL librarians such as improving their knowledge and skills through engaging in continuous learning (Schwandt & Marquardt, 2000: 3), embracing new ways of learning, teaching and researching (Argyris & Schon, 1978: 17), so that they become competent and are in a position to respond to students' technology related information needs.

Interviewed librarians, on the other hand, in large part believed that they are readily adapting to and embracing technological changes affecting academic libraries' resources and services (see Table 4.13). However, this does not seem to be projecting convincingly to humanities undergraduate users of the NUL Library and hence, as pointed out already, needs attention in a learning organization such as the NUL Library. It is encouraging that many of the librarians interviewed (8 out of 13- Table 4.13) highlighted willingness of staff to attend training on evolving technology, an indication of readiness to embrace change. Beagle (2012: 533), having used organizational learning theory to study "the emergent information commons" concludes that the effectiveness and sustainability of an organization are based on its adaptive organizational learning processes. Thus, the readiness of NUL librarians to embrace evolving technology shows the NUL Library's aspirations to be an effective learning organization (Blakiston, 2011: 730) and that it has potential for this especially in view of its abundance of highly qualified LIS staff (see Table 4) and abundance of professional experience (see Table 4.3).

Further indication of this aspiration to be an effective learning organization is that seven of the 13 interviewed librarians made the point that when the system is down, staff do not simply revert to the manual system but prefer that the problem be resolved before continuing with the service – a sign of embracing technology and adapting to change. This readiness is reinforced by the following comment by an interviewed librarian: "There is no way they [NUL librarians] cannot accept technology because nowadays everything is electronic. They are adapting to the digital era". At the same time, there were some uncertainties among NUL librarians as four of 13 librarians presented mixed views and one in the negative on this issue of adapting to technological changes (see Table 4.13). One interviewee indicated that "it is

hard to say whether they [NUL librarians] are accepting or resisting because technology is there and they have no option but to catch up with the changes". Another interviewee revealed that "some decided to retire from work because of technological changes and the fear of the unknown". In other words, they were not able to adapt to the technological changes. This mixture of responses from the librarians (see Table 4.13) on whether NUL librarians are embracing and adapting to technological changes could explain the uncertain perception among the students (see Figure 4.11) – yet a further indication of more work that needs to be done by the NUL Library such as identifying which type of organizational learning between single and double loop (single loop – "making things in a better way" and double-loop – to "create new things and not just making the same old things better" (Arias & Solana, 2013: 704) should be employed by the NUL Library to readily embrace change in order to survive the challenges of a rapidly changing environment (Marquardt, 1996: 1).

Therefore, as a learning organization the NUL Library needs to seriously address challenges to embracing technology highlighted by librarian respondents (see Table 4.14), especially the lack of or insufficient training, coping with rapid changes, shortage of staff and insufficient modern equipment. Buarki, Hepworth and Murray (2011: 501), too, identified coping with change as one of the major challenges facing the LIS profession. One librarian cogently remarked that "as long as technology exists in libraries, there will always be challenges whether we are readily embracing it or not". While no doubt, as evident in the findings, the will for the NUL Library to aspire to be an effective learning organization is there, there needs to be a significant transformation through effective learning and constant training (Schwandt & Marquardt, 2000: 3) of librarians in order to address the challenges to adapting to and embracing technology as highlighted earlier in this section. Addressing the challenges would assist staff to make the transition and adapt fully to new technology and to transfer this perception to the user community as well.

In summary, most of librarians interviewed indicated that they were readily adapting to and embracing technological changes affecting academic library resources and services. However, there seems to be an element of uncertainty about this among student respondents with a few librarians as well expressing mixed views on the matter. Librarian respondents admitted

challenges encountered in attempting to embrace technology. In terms of organizational learning theory, this could be resolved through transforming NUL into an effective learning organization by training librarians to adapt to changes and to engage knowledge transfer throughout the entire organization (NUL Library), including its users.

5.2.5 The type of education and training required for NUL librarians to effectively meet the information needs of humanities undergraduate students in the digital age academic library environment

Educational qualifications are fundamental in the digital academic library environment (Igun, 2006: 2). According to student respondents (143 out of 201 or 71%), Relevant LIS qualification is their preferred type of qualification required for NUL librarians (see Figure 4.12). This affirms that indeed LIS education is an essential and a valuable starting point for LIS professionals to acquire knowledge and skills required in the LIS job market (Riley-Huff & Rholes, 2011: 137). Considering the pervasive impact of ICTs on the LIS environment, it is not surprising that IT related qualification notched up a high frequency count among student respondents as presented in Figure 4.12. It is also not unexpected that a Relevant subject degree (for example, French or Theology) was considered important by a significant 40% of the students surveyed since the NUL Library is servicing an academic and research environment. Table 4.16 revealed that librarian respondents shared a similar sentiment as some of them brought up subject degree as being useful for NUL librarians in order to understand students' information needs better. It is not surprising, considering the digital age academic library environment as well as the dominant age range among the surveyed students (young adults who are technology savvy), that the combination of Relevant LIS qualification and IT related qualification emerges with a frequency count of almost 50% (Table 4.15). It is also interesting to observe in this same table that the combination of LIS qualification, IT related qualification and Relevant subject degree enjoyed a significant frequency percentage of 30% among students who responded to this item.

Unlike the students, librarians interviewed did not emphasize IT related qualifications and this could have something to do with the age gap (students are younger and more technology aware) than the librarians. Librarians, however, did emphasize IT as part of informal education and training (see Table 4.16). Like professionals generally, they tend to place emphasis on

vertical progression in qualifications rather than horizontal moves – hence the emphasis on LIS master’s degree rather than an IT qualification as evident in Table 4.4 which shows the qualifications the interviewed librarians possess – almost 50% of them have master’s degrees in LIS.

With regard to level of education NUL librarians should possess, Figure 4.13 shows that an overwhelming 158 out of 201 or 79% of the students surveyed indicated a postgraduate level, signaling that they expected a high level of knowledge and expertise on the part of their librarians. On the same question, librarian respondents mentioned master’s degree (postgraduate) and bachelor’s degree and diploma (undergraduate) (see Table 4.16) as the type of education and training required of them by their students. Studies by Gerolimos and Konsta (2008: 695), Han and Hswe (2010) and Ocholla and Shongwe (2013: 39) affirm that the LIS job market globally requires both undergraduate (for example, Diploma, Bachelor Degree) and postgraduate (for example, Honours, Masters, PhD.) qualifications.

The interviewed librarians further professed that on top of formal qualifications, there is a need to acquire on-going informal training to augment the formal training they acquired as it would also help them keep abreast with the technological trends in the LIS profession. It is encouraging to observe in Table 4.16 that 10 out of 13 librarians highlighted Basic ICTs, computer skills and evolving technologies (hands-on) as the top most informal training required of NUL librarians. Obviously, competency in ICTs and evolving technologies is what librarians need to meet students’ technological needs as revealed in Figure 4.12 where students indicated IT related qualification as the second most required qualification for librarians in a digital academic library environment. It would seem from Table 4.16 that librarians are keen to attend training on ICTs and new areas involving technology as they also specified need for training on Marketing (online platforms) and Teaching (online and contact). The thirst for ‘online’ training exemplifies embracing technological changes. Teaching and Customer care (see Table 4.16) were highlighted by interview respondents as being part and parcel of librarianship hence they need to be incorporated as types of education and training required by librarians practising in the digital academic library environment. The librarians interviewed mentioned that they would prefer if the informal training is delivered via

workshops, seminars, conferences and, most importantly, via hands-on training in order to acquire practical skills. It is encouraging to observe in Table 4.16 that librarians are ready to employ both old and new methods of learning (online and contact) for organizational effectiveness; hence single and double loop learning (Wijnhoven, 1995: 260; Arias & Solana, 2013: 704), explained earlier, are required for the NUL Library to adapt to changes within the learning organization.

In summary, Relevant LIS qualification, Relevant IT related qualification and a combination of these two at postgraduate and undergraduate levels are the preferred type of education and training required for NUL librarians to meet the humanities undergraduate students' library related information needs, according to students and librarians surveyed. A relevant subject degree is also considered important. Acquiring of LIS professional expertise through both formal and informal education and training by NUL librarians is a sign of transition to an effective learning organization so as to adapt to and embrace technological changes impacting on their knowledge and skills in the 21st century academic library environment.

5.3 Conclusions

Based on the discussion of the main findings in response to the research questions generated to address the study's objective, the following conclusions may be drawn:

- Coursework assignments, practicals and projects and Preparation for tests and examinations are the dominant purposes, amongst others, for which humanities undergraduate students need information from the NUL Library. NUL humanities undergraduate students' library related information needs are being met by the NUL Library to a certain extent only. Therefore, NUL librarians need to further develop their knowledge and skills by engaging in effective learning to more fully meet the information needs of humanities undergraduate students, especially in view of the fact that the library related information needs of students have been dramatically affected by evolving technology.
- A blend of competencies (disciplinary, generic and personal) is required for NUL librarians to meet the library related information needs of humanities undergraduate

students in the current digital age. Table 5.1 captures the knowledge and skills requirements, as perceived by student and librarian respondents, that emerged, *inter alia*, from this study as most required on the part of NUL librarians for this purpose. While all three competency categories are important in the digital academic library environment, the literature reviewed for this study places them in the order as reflected in Table 5.1.

Table 5.1: Knowledge and skills requirements for NUL librarians

Competency category	Knowledge and skills
LIS disciplinary knowledge and skills	Relevant subject knowledge for information seeking purposes Plagiarism and how to avoid it Understanding information needs of library users Information literacy training Information finding skills Ability to use technology to deliver effective library services Information management and processing skills (cataloguing, classification, abstracting, indexing, etc.) Ability to teach students to do online searching Reference management software skills Information retrieval skills (print and electronic)
Generic skills	Communication skills General computer literacy Listening skills Interpersonal skills Online teaching skills Customer service Marketing skills Management skills Teaching and training skills Social media skills
Personal attributes	Good general knowledge Being friendly and welcoming Patient Reliable Responsive to the others' needs Flexible

While there is some correlation between NUL librarians and students surveyed on especially the disciplinary knowledge and skills required by NUL librarians to meet the library related information needs of humanities undergraduate students, there is also some disjuncture between students' and librarians' perceptions of disciplinary knowledge and skills required for this purpose. The application by the NUL Library of organizational learning to understand the perceptions of students, could be used to address this disjuncture.

- Technology has had a significant impact on the roles and functions of NUL librarians. The extent to which technology has affected the roles and functions of NUL librarians is exemplified in services such as Online information databases, Computerized catalogue, and that Library automation and the incorporation of technology into NUL Library's services has made it easy for librarians to execute their daily duties. Technological changes taking place at the NUL library are an indication that the NUL Library has, to some extent at least, adopted organizational learning in its service provision.
- NUL librarians, in the main, seem to be readily adapting to and embracing technological changes affecting academic library resources and services. However, humanities undergraduate students are somewhat uncertain in their perceptions of this and a few librarians themselves have mixed feelings about whether NUL librarians are indeed readily adapting to and embracing technological change. Challenges encountered in attempting to embrace technology include lack of or insufficient training, coping with rapid change, shortage of staff and insufficient modern equipment. Again, the application of organization learning could be used to address these challenges as well as students' perceptions on whether NUL librarians are adapting to and embracing technological changes in their service delivery.
- Relevant LIS qualification, Relevant IT related qualification and a combination of the two at both postgraduate and undergraduate levels appear to be the type of education and training required of NUL librarians to meet humanities undergraduate students' library related information needs. A relevant subject degree as well as informal education and training are also considered important. NUL librarians acquiring professional expertise via both formal and informal education routes is an indication of transition to an effective learning organization which would be able to

adapt to and embrace technological changes impacting on knowledge and skills in the 21st century academic library environment.

5.4 Recommendations

Based on the discussion in Section 5.2 and the conclusions in Section 5.3, this study makes the following recommendations:

- Further education and training of NUL librarians (both formal and informal) towards effective learning so that they may more fully meet the library related information needs of humanities undergraduate students. Such effective organizational learning would also assist NUL librarians to cope with rapid change resulting from evolving technology and to address other challenges encountered in attempting to adapt to and embrace technological changes affecting academic library resources and services.
- The NUL Library needs to engage in rigorous learning and marketing initiatives to make students aware of the technology related services they provide and in this way address the disjuncture between students' and librarians' perceptions of disciplinary knowledge and skills required by NUL librarians to meet the library related information needs of humanities undergraduate students.
- Further study needs to be undertaken in the future to ascertain the progress the NUL Library is making in using effective organizational learning to more fully meet the library related information needs of humanities undergraduate students as well as in assisting NUL librarians in addressing challenges encountered in attempting to adapt to and embrace technological changes affecting academic library resources and services. Such a study or other separate studies should consider investigating other NUL faculties and also postgraduate library related information needs.

5.5 Summary and general conclusion

This chapter discussed the main findings of the study in terms of the research questions guiding the study and in the context of the literature reviewed and the theory (organizational learning) supporting the study. Based on the discussion, conclusions were drawn and recommendations were made. The study's convergent parallel mixed methods approach

within a pragmativist paradigm allowed for the collection of both quantitative and qualitative data from NUL humanities undergraduate students and NUL librarians, respectively, in order to adequately respond to the five research questions generated to address the study's main objective. Organizational learning theory, used to support the study, was useful in guiding the generation of research questions, the design of the data collection instruments, the analysis of data collected and the discussion of the main findings. The researcher is satisfied that the study's research problem captured in the objective of the study has been adequately responded to using the data collected together with support from the literature reviewed and the theory selected to support the study. The research questions generated to guide the study served it well in responding to the study's research problem and objective.

In terms of contribution to practice, it is hoped that the findings from this case study, while not generalizable, would be of benefit to the NUL Library and other similar academic libraries in making them aware of the purposes for which their user communities need information from the library, the knowledge and skills required of academic librarians to meet users' needs, the impact of evolving technology on both users' needs and the roles and functions of librarians as well as the type of education and training required for librarians to effectively practise in the digital age academic library. It is also hoped that this study would inspire the NUL Library and other LIS organizations to become effective learning organizations by supporting their staff (librarians) to adapt to and embrace technological change in order to address the challenges of rapidly evolving ICTs. This study also has relevance for LIS educators in terms of curriculum review and revision to produce graduates with requisite knowledge and skills to meet the information needs of users of the 21st century academic library. In terms of contribution to theory, this study builds upon the existing body of knowledge on the knowledge and skills competencies required of academic librarians in the digital age, especially in the developing context.

References

- Abbott, M. & McKinney, J. 2013. *Understanding and applying research design*. New Jersey: John Wiley & sons.
- Ansari, 2011. Trends of library professionals' job market in Pakistan from 1991 to 2011. *Chinese Librarianship: an International Electronic Journal*. 34: 76-89. Available: <http://www.white-clouds.com/iclc/cliej/cl34ansari.pdf> [2016, February 28].
- Argyris, C. 1982. Organizational learning and management information systems. *ACM SIGMIS Database Winter-Spring*. 13(2-3): 3-11. DOI: 10.1145/1017692.1017693
- Argyris, C. 1976. Single-loop and double-loop models in research on decision making. *Administrative Science Quarterly*. 21(3): 363-375. Available: <http://www.jstor.org/stable/2391848> [2016, July 20].
- Argyris, C. & Schon, D. 1978. *Organizational learning: a theory of action perspective*. Massachusetts: Addison Wesley.
- Arias, M. & Solana, J. 2013. Information systems supported organizational learning as a competitive advantage. *Journal of Industrial Engineering and Management*. 6(3): 702-708. DOI: 10.3926/jiem.555.
- Association of College and Research Libraries. 2006. *Changing Roles of Academic and Research Libraries*. Chicago: Association of College and Research Libraries. Available: <http://www.ala.org/acrl/issues/value/changingroles> [2016, February 20].
- Babbie, E. 2016. *The practice of social research*. 14th ed. Boston: Cengage Learning.
- Barner, K. & Tal, S. 2012. SFX, information needs, the academic library, and its user. *Library Philosophy and Practice*. Available: <http://digitalcommons.unl.edu/libphilprac/754/> [2016, March12].
- Bawden, D. 2008. Smoother pebbles and the shoulders of giants: the developing foundations of information science. *Journal of Information Science*. 34(4):415–426. DOI: 10.1177/0165551508089717 415.
- Bawden, D., Vilar, P. & Zabukovec, V. 2005. Education and training for digital librarians: a Slovenia/UK comparison. *Aslib Proceedings: New Information Perspectives*. 57(1): 85-98. DOI: 10.1108/00012530510579084.

- Beagle, D. 2012. The emergent information commons: philosophy, models, and 21st century learning paradigms. *Journal of Library Administration*. 52(6-7): 518-537. DOI: 10.1080/01930826.2012.707951.
- Biswas, G. 2009. Changing role of librarians in digital era and need of professional skills, efficiency & competency. *National Seminar on Library and Information Services in Changing Era*. 22-23 January 2009. University of Pune: Department of Library and Information Science and Jayakar Library. Available: <http://www.goutambiswasresearch.yolasite.com/resources/Changing%20Role%20of%20Librarians%20in%20Digital%20Era%20and%20Need%20of%20Professional%20Skills,%20Efficiency%20and%20Competency.pdf> [2016, March 8].
- Blakiston, R. 2011. Building knowledge, skills, and abilities: continual learning in the new information landscape. *Journal of Library Administration*. 51(7-8): 728-743. DOI: 10.1080/01930826.2011.601272.
- Borgman, C. 2003. Designing digital libraries for usability. In *Digital library use: social practice in design and evaluation*. P. Bishop, N. Van House & B. Battenfield, Eds. London: Massachusetts Institute of Technology. 85-118.
- Bronstein, J. 2015. An exploration of the library and information science professional skills and personal competencies: an Israeli perspective. *Library & Information Science Research*. 37(2): 130–138. DOI: 10.1016/j.lisr.2015.02.003.
- Brown, S. 2002. Learning in the digital age: forum futures 2002. 20-23. Available: <https://net.educause.edu/ir/library/pdf/ffp0203s.pdf> [2016, May 23].
- Buarki, H., Hepworth, M. & Murray, I. 2011. ICT skills and employability needs at the LIS programme Kuwait: a literature review. *New Library World*. 112(11/12): 499 – 512. DOI: 10.1108/03074801111190392.
- Burnett, P. 2013. Challenges and problems of library and information science education in selected African countries. *Proceedings of the 79th IFLA General Conference and Assembly: Future Libraries: Infinite Possibilities*. 17-23 August 2013. Singapore: IFLA World Library and Information Congress. Available: <http://library.ifla.org/175/1/199-burnett-en.pdf> [2016, March 06].
- Campbell, J. 2006. Changing a cultural icon: the academic library as a virtual destination. *EDUCAUSE Review*. 41(1): 16-18. Available:

- <http://er.educause.edu/~media/files/article-downloads/erm0610.pdf> [2016, February 20].
- Central Intelligence Agency. 2016. *The world factbook: Lesotho*. Available: <https://www.cia.gov/library/publications/the-world-factbook/geos/lt.html> [2016, May 20].
- Chartered Institute of Personnel and Development. 2006. *Identifying needs in learning organizations*. Available: <http://www.cipd.co.uk/NR/rdonlyres/BAE22874-1D3C-4912-BBD9-1C14803E8A44/0/1843981645sc.pdf> [2016, April 20].
- Chiware, E. 2007. Training librarians for the digital age in African university libraries. Paper presented at the Satellite Meeting: IT and Research in African University Libraries: Present and Future Trends of the 73rd IFLA World Library and Information Congress, August 2007. Available: <http://www.ifla.org/IV/ifla73/satellite1Programme-en.pdf> [2016, February 18].
- Choi, Y. & Rasmussen, E. 2009. What qualifications and skills are important for digital librarian positions in academic libraries? A job advertisement analysis. *The Journal of Academic Librarianship*. 35(5): 457–467. DOI: 10.1016/j.acalib.2009.06.003.
- Collins, J. & Hussey, R. *Business research: a practical guide for undergraduate and postgraduate students*. 2nd ed. New York: Palgrave Macmillan.
- Cooke, N. 2012. Professional development 2.0 for librarians: developing an online personal learning network (PLN). *Library Hi Tech News*. 29(3): 1-9. DOI: 10.1108/07419051211241840.
- Cox, A. & Corral, S. 2013. Advances in information science: evolving academic library specialties. *Journal of the American Society for Information Science and Technology*. 64(8): 1526–1542. DOI: 10.1002/asi.22847.
- Creative Research System. 2012. The survey system: sample size calculator. Available: <http://www.surveysystem.com/sscalc.htm> [2016, July 22].
- Creswell, J. 2014. *Research design: qualitative and quantitative and mixed methods approaches*. 4th ed. London: Sage.
- Creswell, J. & Plano Clark, V. 2011. *Designing and conducting mixed methods research*. 2nd ed. London: Sage.

- Davidson, J. 2014. Supporting early-career researchers in data management and curation. In *Mastering digital librarianship: strategy, networking and discovery in academic libraries*. A. Mackenzie & L. Martin, Eds. London: Facet. 83-102.
- Dawson, C. 2007. *A practical guide to research methods: a user-friendly manual for mastering research techniques and projects*. 3rd ed. Oxford: How to books.
- Denscombe, M. 1998. *The good research guide: for small scale social research projects*. Buckingham: Open University Press.
- De Vos, A., Strydom, H., Fouche, C. & Delport, C. 2011. *Research at grassroots: for social sciences and human service professions*. 4th ed. Pretoria: Van Schaik.
- Emiri, O. 2015. Digital literacy skills among librarians in university libraries in the 21st century in Edo and Delta States, Nigeria. *International Journal of Scientific & Technology Research*. 4(8): 153-159. Available: <http://www.ijstr.org/paper-references.php?ref=IJSTR-0515-11424> [2016, March 1].
- Eshet-Alkalai, Y. 2004. Digital literacy: a conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia*. 13(1): 96-106.
- Ezema, I., Ugwuanyi, C. & Ugwu, C. 2014. Skills requirements of academic librarians for the digital library environment in Nigeria: a case of University of Nigeria, Nsukka. *International Journal of Library and Information Science*. 3(1): 17-31. Available: file:///F:/Ezema%20SKILLS_REQUIREMENTS_OF_ACADEMIC_LIBRARIA.pdf [2016, March 2].
- Faibisoff, S. & Ely, D. 1974. *Information and information needs*. Available: <http://files.eric.ed.gov/fulltext/ED100311.pdf> [2016, February 25].
- Fiol, M. & Lyles, L. 1985. Organizational learning. *The Academy of Management Review*. 10(4): 803-813. Available: <http://www.jstor.org/stable/258048> [2016, July].
- Fisher, B. 2004. Workforce skills development: the professional imperative for information services in the United Kingdom. *Proceedings of the ALIA 2004 Biennial Conference on challenging ideas. 21–24 September 2004*. Gold Coast, Australia: Australian Library and Information Association. Available: <http://conferences.alia.org.au/alia2004/pdfs/fisher.b.paper.pdf> [2016, March 05].
- Fisher, C. 2010. *Researching and writing a dissertation: an essential guide for business students*. 3rd ed. Cape Town: Pearson Education.

- Fourie, I. 2004. Librarians and the claiming of new roles: how can we try to make a difference? *Aslib Proceedings*. 56(1): 62-74. DOI: 10.1108/00012530410516877.
- Gerolimos, M. & Konsta, R. 2008. Librarians' skills and qualifications in a modern informational environment. *Library Management*. 29(8/9): 691 – 699 DOI: 10.1108/01435120810917305.
- Goetsch, L. 2008. Reinventing our work: new and emerging roles for academic librarians. *Journal of Library Administration*. 48(2): 157-172. DOI: 10.1080/01930820802231351.
- Haddow, G. 2012. Knowledge, skills and attributes for academic reference librarians. *Australian Academic & Research Libraries*. 43(3): 231-248. DOI: 10.1080/00048623.2012.10722279.
- Han, M. & Hswe, P. 2010. The evolving role of the metadata librarian: competencies found in job descriptions. *Association for Library Collections and Technical Services*. 54(3). Available: <https://journals.ala.org/lrts/article/view/5557/6839> [2016, February 25].
- Harvey, R. 2010. *Digital curation: a how to do it manual*. New York: Neal Schuman.
- Harvey, R. & Higgins, S. 2003. Defining fundamentals and meeting expectations: trends in LIS education in Australia. *Education for Information*. 21(2/3): 149–157. Available: <https://pdfs.semanticscholar.org/339d/968cc43342257fe87cb87c9a843c145482aa.pdf> [2016, April 23].
- Hashim, L. & Mokhtar, W. 2012. Preparing new era librarians and information professionals: trends and issues. *International Journal of Humanities and Social Science*. 2(7): 151-156. Available: http://www.ijhssnet.com/journals/Vol_2_No_7_April_2012/16.pdf [2016, February 28].
- Howard, K. 2010. Programming not required: skills & knowledge for the digital library environment. *Australian Academic & Research Libraries*. 41(4): 260-275. DOI: 10.1080/00048623.2010.10721480.
- HR Bartender. 2016. *The difference between knowledge, skills and abilities*. Available: <https://www.hrbartender.com/2013/recruiting/the-difference-between-knowledge-skills-and-abilities/> [2016, April 28].
- Igun, S. 2006. Human capital for Nigerian libraries in the 21st century. *Library philosophy and practice*. 8(2): 1-5. Available:

- <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1082&context=libphilpra>
c [2016, August 29].
- Itsekor, V. & James, J. 2012. Influence of digital literacy on career progression and work motivation of academic library staff in south-west Nigeria. *Library Philosophy and Practice*. 1-24. Available:
<http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2029&context=libphilpra>
c [2016, April 22].
- Jaguszewski, J. & Williams, K. 2013. New roles for new times: transforming liaison roles in research libraries. Washington: Association of Research Libraries. Available:
<http://www.arl.org/storage/documents/publications/nrnt-liaison-roles-revised.pdf>
[2016, February 20].
- Kavulya, J. 2007. Training of library and information science (LIS) professionals in Kenya. *Library Review*. 56(3): 208-223. DOI: 10.1108/00242530710735993.
- Knight, J. 2009. The contemporary library and information services manager: knowledge and skills requirements. *Business Information Review*. 26(1): 51–56. DOI:
10.1177/0266382108101308.
- Knowledge Management Tools. 2015. *Defining knowledge, information, data*. Available:
<http://www.knowledge-management-tools.net/knowledge-information-data.html>
[2016, May 23].
- Kumar, R. 1996. *Research methodology: a step-by-step guide for beginners*. London: Sage.
- Leedy, P. & Ormrod, J. 2005. *Practical research: planning and design*. New Jersey: Pearson Education.
- Leedy, P. & Ormrod, J. 2010. *Practical research: planning and design*. Cape Town: Pearson Education.
- Lippincott, J. 2010. Information commons: meeting millennials' needs. *Journal of Library Administration*. 50(1): 27-37. DOI: 10.1080/01930820903422156.
- Luce, R. 2008. A new value equation challenge: the emergence of eResearch and roles for research libraries. In *No brief candle: reconceiving research libraries for the 21st Century*. Washington: Council on Library and Information Resources. 42-50.
Available: <http://www.clir.org/pubs/reports/pub142/pub142.pdf> [2016, February, 22].

- Lues, L. & Lategan, K. 2006. *Re:search ABC*. Cape Town: Sun Press.
- Lynch, B. & Smith, K. 2001. The changing nature of work in academic libraries. *College & Research Libraries*. 62(5): 407-420. DOI: 10.5860/crl.62.5.407.
- Magara, E. 2010. Challenges of library and information science capacity building in southern Sudan: a situational analysis. *Conference Proceedings of IST-Africa on International Information Management Corporation*. 19 - 21 May 2010. Durban, South Africa: IST-Africa. Available: [http://www.ist-africa.org/Conference2010/outbox/ISTAfrica Paper ref 123 doc 3262.pdf](http://www.ist-africa.org/Conference2010/outbox/ISTAfrica_Paper_ref_123_doc_3262.pdf) [2016, April 10].
- Makori, E. 2009. Reinventing academic libraries in Kenya. *Library Hi Tech News*. 26(5/6): 10-13. DOI: 10.1108/07419050910985264.
- Maree, K. Ed. 2007. *First steps in research*. Pretoria: Van Schaik.
- Marquardt, M. 1996. *Building the learning organization: a systems approach to quantum improvement and global success*. New York: McGraw-Hill.
- Mathews, J. & Pardue, H. 2009. The presence of IT skill sets in librarian position announcements. *College & Research Libraries*. 70(3): 250-257. DOI: 10.5860/crl.70.3.250.
- Merriam-Webster. 2015. *Merriam-Webster dictionary*. Available: <http://www.merriam-webster.com/dictionary/Mosotho> [2016, May 22].
- Missingham, R. 2006. Library and information science. *Library Management*. 27(4/5): 257-268. DOI: 10.1108/01435120610668197.
- Morgan, D. 2007. Paradigms lost and pragmatism regained: methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*. 1(1): 48-76. DOI: 10.1177/2345678906292462.
- Mouton, J. 2001. *How to succeed in your master's and doctoral studies: a South African guide and resource book*. Pretoria, South Africa: Van Schaik.
- Musangi, P. 2015. Library 2.0 and the changing landscape of information services in academic libraries in Kenya. *International Journal of Library and Information Science*. 7(10): 183-187. DOI: 10.5897/IJLIS2014.0492.
- Myburgh, S. & Tammaro, A. 2013. *Exploring education for digital librarians: meaning, modes and models*. Oxford: Chandos.

- National University of Lesotho. 2006. *Thomas Mofolo Library strategic plan*. Roma, Lesotho: NUL.
- National University of Lesotho. 2016. *Historical note of the National University of Lesotho*. Available: http://www.nul.ls/index.php?option=com_content&view=article&id=130&Itemid=523 [2016, April 15].
- Neuman, L. 2012. *Basics of social research: qualitative and quantitative approaches*. 3rd ed. Cape Town: Pearson.
- Ngulube, P. 2015. Trends in research methodological procedures used in knowledge management studies. *African Journal of Library, Archives and Information Science*. 25(2): 125-143. DOI: 10.13140/RG.2.1.2778.4162.
- Nicholas, D. & Herman, E. 2009. *Assessing information needs in the age of the digital consumer*. New York: Routledge. Available: [http://ciber-research.eu/download/20160103-Information needs of digital consumer-2009.pdf](http://ciber-research.eu/download/20160103-Information%20needs%20of%20digital%20consumer-2009.pdf) [2016, March 20].
- Nonthacumjane, P. 2011. Key skills and competencies of a new generation of LIS professionals. *IFLA Journal*. 37(4): 280–288. DOI: 10.1177/0340035211430475
- Ocholla, D. & Bothma, T. 2007. *Trends, challenges and opportunities for LIS education and training in Eastern and Southern Africa*. Available: [http://repository.up.ac.za/bitstream/handle/2263/2674/Ocholla Trends\(2007\).pdf;jsessionid=8826072CB0D9ECA3908A5A278BA4DCDE?sequence=1](http://repository.up.ac.za/bitstream/handle/2263/2674/Ocholla_Trends(2007).pdf;jsessionid=8826072CB0D9ECA3908A5A278BA4DCDE?sequence=1) [2016, February23].
- Ocholla, D. & Shongwe, M. 2013. An analysis of the library and information science (LIS) job market in South Africa. *South African Journal of Libraries and Information Science*. 79(1): 35-43. DOI: 10.7553/79-1-113.
- O'Connor, S. & Li, M. 2008. Skills for future university librarians. *Chinese Journal of Library and Information Science*. 1(1): 74-87. Available: [http://ira.lib.polyu.edu.hk/bitstream/10397/513/1/Skills%20for%20the%20ofuture%20Tushuguan 26%20June%2008%20final%20revised.pdf](http://ira.lib.polyu.edu.hk/bitstream/10397/513/1/Skills%20for%20the%20ofuture%20Tushuguan%2026%20June%2008%20final%20revised.pdf) [2016, February 20].

- O'Connor, S. & Sidorko, P. 2010. *Imagine your library's future: scenario planning for libraries and information organisations*. Oxford: Chandos.
- Ogunsola, L. 2011. The next step in librarianship: is the traditional library dead? *Library Philosophy and Practice*. Available: <http://www.webpages.uidaho.edu/~mbolin/ogunsola2.htm> [2016, April 24].
- Okonedo, S., Amusa, O., Bakare, O., Bamigboye, O. & Alawiye, M. 2014. ICT influence on globalization of library and information services delivery in academic libraries in South West, Nigeria. *Information and Knowledge Management*. 4(12): 205-212. Available: [file:///C:/Users/user/Downloads/18630-20627-1-pPB%20\(7\).pdf](file:///C:/Users/user/Downloads/18630-20627-1-pPB%20(7).pdf) [2016, April 24].
- O'Leary, Z. 2005. *Researching real-world problems: a guide to methods of inquiry*. London: Sage.
- Orme, V. 2008. You will be ...: a study of job advertisements to determine employers' requirements for LIS professionals in the UK in 2007. *Library Review*. 57(8): 619-633. DOI: 10.1108/00242530810899595.
- Pan, L. 2008. *Preparing literature reviews: qualitative and quantitative approaches*. 3rd ed. Glendale: Pyczak.
- Partridge, H., & Hallam, G. (2004). The double helix: a personal account of the discovery of the structure of [the information professional's] DNA. *Proceedings of the ALIA 2004 Biennial Conference on challenging ideas*. 21–24 September 2004. Gold Coast, Australia: Australian Library and Information Association. Available: <http://conferences.alia.org.au/alia2004/pdfs/partridge.h.paper.pdf>. [2016, February 26].
- Partridge, H., Lee, J. & Munro, C. 2010. Becoming “librarian 2.0”: the skills, knowledge, and attributes required by library and information science professionals in a web 2.0 world (and beyond). *Library Trends*. 59(1-2): 315-335. DOI: 10.1353/lib.2010.0029.
- Partridge, H., Menzies, V., Lee, J. & Munro, C. 2010. The contemporary librarian: skills, knowledge and attributes required in a world of emerging technologies. *Library and Information Science Research*. 32(4): 265-271. DOI: 10.1016/j.lisr.2010.07.001.
- Patel, U. 2012. Academic libraries and library professionals in the electronic teaching-learning era. *International Journal of Information Technology and Library Science*.

- 1(1): 1-7. Available: [file:///F:/Academic Libraries and Library Professio.pdf](file:///F:/Academic%20Libraries%20and%20Library%20Professio.pdf) [2016, February, 20].
- Patton, M. & Cochran, M. 2002. A guide to using qualitative research methodology. Available: https://evaluation.msf.org/sites/evaluation/files/a_guide_to_using_qualitative_research_methodology.pdf [2016, June 10].
- Pefole, K. 2004. *Country study*. Available: <https://www.issafrica.org/pubs/Books/Hide+Seek/Lesotho.pdf> [2016, May 15].
- Pickard, J. 2013. *Research methods in information*. 2nd ed. London: Facet.
- Pietersen, J. 2015. The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries. Masters Thesis. University of Cape Town. Available: http://open.uct.ac.za/bitstream/handle/11427/13733/thesis_hum_2015_pietersen_j.pdf?sequence=1 [2016, February 27].
- Prasad, H. 2000. *Information needs and users*. Available: <http://lemi.uc3m.es/est/forinf@/index.php/Forinfa/article/viewFile/33/34> [2016, April 10].
- Raju, J. 2014. Knowledge and skills for the digital era academic library. *The Journal of Academic Librarianship*. 40(2): 163–170. DOI: 10.1016/j.acalib.2014.02.007.
- Raju, J. 2015. LIS education in the digital age for an African agenda. *Library Trends*. 64(1): 161-177. DOI: 10.1353/lib.2015.0038.
- Raju, J. 2016. Core competencies in LIS education: professional, generic and personal competencies for the higher education LIS sector. Paper presented at the World Library and Information Congress 82nd IFLA General Conference and Assembly Satellite Meeting Co-organised by the Section on Education and Training and Section on Library Theory and Research, The Conference Centre at OCLC, Dublin, Ohio, USA, 10 August 2016. Available: <http://people.ischool.illinois.edu/~weech/IFLA/Jaya%20Raju-16%20IFLA-Satellite.pdf> [2016, September 20].

- Reitz, J. 2002. *Online dictionary of library and information science*. Available: <http://vlado.fmf.uni-lj.si/pub/networks/data/dic/odlis/odlis.pdf> [2016, April 21].
- Research Advisors. 2006. *Sample size table*. Available: <http://research-advisors.com/tools/SampleSize.htm> [2016, July 26].
- Riley-Huff, D., & Rholes, J. 2011. Librarians and technology skill acquisition: issues and perspectives. *Information Technology and Libraries*, 30(3): 129–140. DOI: 10.6017/ital.v30i3.1770.
- Ruel, E., Wagner, W. & Gillespie, B. 2016. *The practice of survey research: theory and applications*. London: Sage.
- Sarantakos, S. 2013. *Social Research*. 4th ed. Hampshire: Palgrave Macmillan.
- Sarasvathy, P., Nambratha, G. & Giddaiah, D. 2012. Changing roles of the librarians in the virtual/digital era. *Journal of Information Management*. 49(5): 495-500. Available: <http://eprints.uni-mysore.ac.in/13598/1/10.pdf> [2016, February 29].
- Satgoor, U. 2015. It's not business as usual! CPD as a change imperative for LIS professionals. *Proceedings of the Library and Information Studies Centre 75 years Commemorative Conference on LIS Education and Research in a Dynamic Information Landscape*. 27-28 November 2014. Cape Town, South Africa: University of Cape Town Libraries. 44-53. DOI: 10.15641/0-7992-2526-6.
- Schmidt, E. & Cohen, J. 2013. The new digital age: reshaping the future of people, nations and business. Available: <https://www.hodder.co.uk/assets/HodderStoughton/downloads/New%20Dig%20Age.pdf> [2016, May 23].
- Schulz, M. 2002. Organizational learning. In *The Blackwell companion to organizations*. J. Baum, Ed. Oxford: Blackwell. 415-441.
- Schwandt, D. & Marquardt, M. 2000. *Organizational learning: from world-class theories to global best practices*. London: St. Lucie.
- Shahnazarian, D., Hagemann, L., Aburto, M. & Rose, S. 2013. Informed consent in human subjects research. Available: <http://oprs.usc.edu/files/2013/04/Informed-Consent-Booklet-4.4.13.pdf> [2016, July 28].
- Shank, J. & Bell, B. 2011. Blended librarianship: [re]envisioning the role of librarian as educator in the digital information age. *Reference & User Services Quarterly*. 51(2):

- 105-110. Available:
http://www.slcc.edu/internalaudit/docs/Teaching_Become%20Blended%20Librarian_ship.pdf [2016, March 1].
- Shenton, A. & Dixon, P. 2004. The development of young people's information needs. *Library and Information Research*. 28 (89): 25-34. Available:
<http://www.lirjournal.org.uk/lir/ojs/index.php/lir/article/viewFile/168/215> [2016, March 13].
- Shibanda, G. 2001. Skills and competencies for digital information management in Africa. The World Library and Information Congress 67th IFLA Council and General Conference on Libraries and Librarians: Making a Difference in the Knowledge Age. 16-25 August 2001. Boston, USA: IFLA Council and General Conference. Available:
<http://files.eric.ed.gov/fulltext/ED459707.pdf> [2016, March 7].
- Shongwe, M. & Ocholla, D. 2012. The IT factor in LIS jobs: a South African perspective. Paper presented at the IFLA General Conference 78th and Assembly Meeting on Libraries Now! - Inspiring, Surprising, Empowering, Helsinki, Finland, 11-17 August 2012. Available: <http://conference.ifla.org/past-wlic/2012/150-shongwe-en.pdf> [2016, March 7].
- Simon, M. 2011. Assumptions, limitations and delimitations. Available:
<http://dissertationrecipes.com/wp-content/uploads/2011/04/AssumptionslimitationsdelimitationsX.pdf> [2016, May 24].
- Silverman, D. 2013. *Doing qualitative research*. 4th ed. London: Sage.
- Smith, D., Hurd, J. & Schmidt, L. 2013. Developing core competencies for library staff: how University of South Florida library re-evaluated its workforce. *College & Research Libraries News*. 74(1): 14-35. Available:
<http://crln.acrl.org/content/74/1/14.full.pdf+html> [2016, April 22].
- Sreenivasulu, V. 2000. The role of a digital librarian in the management of digital information systems (DIS). *The Electronic Library*. 18(1): 12-20. DOI: 10.1108/02640470010320380_
- Thomas, M. P. 2003. *Blending qualitative and quantitative research methodology in theses and dissertations*. California: Corwin.

- Travis, J. 1999. Exploring the constructs of evaluative criteria for interpretivist research. *Proceedings of the 10th Australasian Conference on Information Systems*. Wellington, New Zealand. 1037-1049. Available: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.4.1994&rep=rep1&type=pdf> [2016, June10].
- VanWynsberghe, R. & Khan, S. 2007. Redefining case study. *International Journal of Qualitative Methods*. 6(2): 80-94. DOI: 10.1177/160940690700600208
- Walliman, N. 2011. *Your research project: designing and planning your work*. 3rd ed. London: Sage.
- Webster, S., Lewis, J. & Brown, A. 2014. Ethical considerations in qualitative research. In *Qualitative research practice: a guide for social science students and researchers*. J. Ritchie, J. Lewis, C. McNaughton Nicholls & R. Ormston, Eds. London: Sage. 77-110.
- Weech, T. 2005. *Analysis of courses and modules: education for digital librarianship*. Available: <http://dspace-unipr.cineca.it/bitstream/1889/482/1/Weech.pdf> [2016, April 27].
- Welman, C., Karuger, F. & Mitchell, B. 2005. *Research methodology*. 3rd ed. Cape Town: Oxford.
- Wijnhoven, F. 1995. *Organizational learning and information systems: the case of monitoring information and control systems in machine bureaucratic organizations*. Enschede, the Netherlands: University of Twente, Department of Information Management. Available: <http://doc.utwente.nl/76557/1/Wijnhoven95organizational.pdf> [2016 April 26].
- Wood, A. 2007. *A comprehensive library staff training programme in the information age*. Oxford: Chandos.
- Xu, H. 1996. The impact of automation job requirements and qualifications for cataloguers and reference librarians in academic libraries. *Library Resources & Technical Services*. 40(1): 9-31.
- Yin, R. 2009. *Case study research: design and methods*. 4th ed. London: Sage.
- Yin, R. 2014. *Case study research: design and methods*. 5th ed. London: Sage.

Zhou, Y. 1996. Analysis of trends in demand for computer-related skills for academic librarians from 1974 to 1994. *College & Research Libraries*. 57(3): 259-272. DOI: 10.5860/crl_57_03_259

Zijlma, A. 2016. *Lesotho facts and information*. Available: <http://goafrika.about.com/od/lesotho/a/Lesotho-Facts-And-Information.htm> [2016, May 16].

Appendices

Appendix A

Knowledge and skills requirements of National University of Lesotho librarians in meeting information needs of humanities undergraduate students in the digital age

Informed consent form for NUL librarians' participation in interview session

Description of the research and participation:

My name is Pontso Nkuebe. I am a student undertaking research as part of the requirements towards completion of my master's degree in Library and Information Studies (MLIS) at the University of Cape Town in the Library and Information Studies Centre. The objective of this study is to ascertain what knowledge and skills are required for NUL librarians to meet the information needs of humanities undergraduate students in the digital era academic library environment. This study is being supervised by Associate Professor Jaya Raju. As part of this research, I would need to interview librarians to gain an understanding of how evolving technology has affected their knowledge and skills requirements for the workplace; and their readiness in adapting to changes in the digital academic library environment. Hence, your participation in responding to questions relating to this study is of utmost importance and would be greatly appreciated.

This study has received ethical clearance from both the University of Cape Town (where the master's study is registered) and from the National University of Lesotho (research site for the study).

Potential benefits:

There are no direct benefits to you for your participation in this research. However, the findings of this study, it is hoped, would make a contribution to knowledge (theory) and practice in the area of service to undergraduate students in the digital academic library environment.

Protection of confidentiality:

Any information obtained in the study would be treated with confidentiality. Please be assured that your responses would be reported anonymously. For example, data collected

from you would be coded using pseudonyms such as a, b, c or 1, 2, 3, etc. Data collected would be used for research purposes only.

Voluntary participation:

Kindly be informed that your participation in this study is voluntary. You may withdraw from the study at any time without any prejudice to yourself. You are not obliged to respond to questions that make you feel uncomfortable. It is only with your permission that the interview would be audio recorded. Participation in this interview should take approximately 30 minutes.

Contact information:

If you have any questions or concerns about this study, please contact:

Pontso Nkuebe (Research Student)

A/Prof. Jaya Raju (Research Supervisor)

NKBMAN003@myuct.ac.za

jaya.raju@uct.ac.za

+27 71 311 3637

+27 21 650 3091

Informed consent:

Please initial box

I confirm that I have read and understand the information provided

I was given an opportunity to ask any clarifying questions I had

I understand I am participating voluntarily and may withdraw at any time

I understand that I am not obliged to answer all questions

I agree to this interview being recorded

YES

NO

Name of Participant

Date

Signature

Name of Research Student

Date

Signature

Appendix B

Knowledge and skills requirements of National University of Lesotho librarians in meeting information needs of humanities undergraduate students in the digital age

Semi-structured interview schedule for NUL librarians

Preamble

My name is Pontso Nkuebe. I am a student undertaking research as part of the requirements towards completion of my master's degree in Library and Information Studies (MLIS) at the University of Cape Town in the Library and Information Studies Centre. The objective of this study, which is supported by organizational learning theory, is to ascertain what knowledge and skills are required for NUL librarians to meet the information needs of humanities undergraduate students in the digital era academic library environment. This study is being supervised by Associate Professor Jaya Raju.

As part of this research, I would need to interview librarians to gain an understanding of how evolving technology has affected their knowledge and skills requirements for the workplace; and their readiness in adapting to changes in the digital academic library environment. Hence, your participation in responding to questions relating to this study is of utmost importance and would be greatly appreciated. This study has received ethical clearance from both the University of Cape Town (where the master's study is registered) and from the National University of Lesotho (research site for the study).

You have agreed to participate in this interview by completing the **Informed Consent Form** and returning it to me. I thank you for that. Any information obtained in the study would be treated with confidentiality. Please be assured that your responses would be reported anonymously. For example, data collected from you would be coded using pseudonyms such as a, b, c or 1, 2, 3, etc. Data collected would be used for research purposes only. Permission to record this interview has been requested. Participation in this interview should take approximately 30 minutes.

A. Biographical information

1. What is your current job title?
2. What department or section of NUL Library are you employed in?
3. How long have you been in this position?
4. What is your highest academic qualification?
5. What is your highest LIS qualification?
6. For how long (total number of years) have you been employed in a professional capacity in an academic library (NUL or elsewhere)?

B. Library related information needs

7. What are the library related information needs of NUL humanities undergraduate students in the current digital age?

In other words, what do NUL humanities undergraduate students use NUL Library services for? **[Prompt, if necessary].**

8. How do you think technology has affected NUL humanities undergraduate students' library related information needs?

C. Disciplinary knowledge

9. What disciplinary knowledge do you think is required by NUL librarians to meet the library related information needs of humanities undergraduate students? **(to clarify concepts: 'disciplinary knowledge' refers to professional knowledge, in this case LIS professional knowledge; 'knowledge' refers to *what one should know or what one should understand*).**
10. Please provide examples of such disciplinary knowledge.

D. Disciplinary skills

11. What disciplinary skills do you think are required by NUL librarians to meet the library related information needs of humanities undergraduate students? **(to clarify concepts: ‘disciplinary skills’ refer to professional skills, in this case LIS professional skills; ‘skills’ refer to *what one should be able to do*).**
12. Please provide examples of such disciplinary skills.

E. Generic skills

13. What generic skills do you think are required by NUL librarians to meet the library related information needs of humanities undergraduate students? **(to clarify concepts: ‘generic skills’ refer to transferable skills applicable to all disciplines or professions; ‘skills’ refer to *what one should be able to do*).**
14. Please provide examples of such generic skills.

F. Personal attributes

15. What personal attributes do you think are required by NUL librarians to meet the library related information needs of humanities undergraduate students? **(to clarify concepts: ‘personal attributes’ refer to appropriate attitudes, behaviours and values).**
16. Please provide examples of such personal attributes.

G. Influence of technology

17. Do you believe technology has affected the roles and functions of NUL librarians?
18. How has technology impacted on the roles and functions of NUL librarians?

Please provide concrete examples of the impact of technology on the roles and functions of NUL librarians. **[Prompt, if necessary].**

H. Adapting to technological changes

19. Do you believe that NUL librarians are readily adapting to and embracing technological changes affecting academic libraries' resources and services?

20. How are NUL librarians embracing these technological changes?

Please provide examples. [**Prompt, if necessary**].

21. If NUL librarians are not readily embracing technological changes, what are the challenges to this?

I. Education and training

22. What type of education and training do you think are required for NUL librarians to effectively meet the library related information needs of humanities undergraduate students in the digital age?

What type of formal education and training? Please provide examples.

[**Prompt 1, if necessary**].

What type of informal education and training? Please provide examples. [**Prompt 2, if necessary**].

J. General

23. Do you have any questions or comments relating to the issues covered in this interview?

Thank you for consenting to this interview, and for your time and effort in participating. Any queries about the interview or the study may be directed to the student researcher at pontsonkuebe@gmail.com or NKBMAN003@myuct.ac.za

[Record date, time and duration of the interview]

Appendix C

Knowledge and skills requirements of National University of Lesotho librarians in meeting information needs of humanities undergraduate students in the digital age

Questionnaire for NUL humanities undergraduate students

Preamble

My name is Pontso Nkuebe. I am a student undertaking research as part of the requirements towards completion of my master's degree in Library and Information Studies (MLIS) at the University of Cape Town in the Library and Information Studies Centre. The objective of this study, which is supported by organizational learning theory, is to ascertain what knowledge and skills are required for NUL librarians to meet the information needs of humanities undergraduate students in the digital era academic library environment. This study is being supervised by Associate Professor Jaya Raju.

As part of this research, I would need to survey humanities undergraduate students to gain an understanding of how evolving technology has impacted on their library related information needs. Hence, your participation in responding to questions relating to this study is of utmost importance and would be greatly appreciated. This study has received ethical clearance from both the University of Cape Town (where the masters study is registered) and from the National University of Lesotho (research site for the study).

Please be assured that your responses would be collected and captured anonymously. For example, questionnaires collected from respondents would be coded using pseudonyms such as a, b, c or 1, 2, 3, etc. Data collected would be used for research purposes only. Completing this questionnaire should take you approximately 10 minutes.

Instructions:

Please respond by **ticking (v)** where applicable, or providing responses where required.

A. Biographical information

1. Humanities department:

- African Languages and Literature
- Development Studies
- English
- French
- Historical Studies
- Philosophy
- Theology and Religious Studies

2. Programme of study e.g. BA Humanities, Diploma in Library and Information Science, etc.

3. Year of study:

- Year 1
- Year 2
- Year 3
- Year 4
- Year 5

4. In what age range are you?

- 17 and under
- 18 – 22
- 23 – 27
- 28 – 32
- 33 and older

B. Library related Information needs

5. As a humanities undergraduate student, for what purpose/s do you need information from the NUL Library? (You may tick more than one option.)

- Coursework reading requirements
- Coursework assignments, practicals and projects
- Preparation for tests and examinations
- Tutorials, seminars and workshops
- Guidance on bibliographic referencing
- To learn how to use information databases and other electronic information resources
- To learn how to locate information sources and resources using the library website
- Other (**please specify**)

6. To what extent are the information needs listed in 5 above met by the NUL Library?

Information needs	Poor	Average	Good	Excellent
Coursework reading requirements				
Coursework assignments, practicals and projects				
Preparation for tests and examinations				
Tutorials, seminars and workshops				
Guidance on bibliographic referencing				
To learn how to use information databases and other electronic information resources				
To learn how to locate information sources and resources using the library website				
Other (as specified in 5 above)				

C. Library and Information Science (LIS) disciplinary knowledge requirements

7. Which of the following disciplinary knowledge sets (**that is, knowledge belonging to the Library and Information Science (LIS) discipline**) would you expect your NUL librarians to possess to meet your library related information needs as an undergraduate student? (You may tick more than one option.)

- Relevant Library and Information Science (LIS) qualification

- Relevant subject knowledge (e.g. philosophy, theology, etc.) for information searching purposes
- Library rules and procedures
- Understanding information needs of library users
- Knowledge of information databases (general or subject specific)
- Knowledge of new technologies (e.g. tablets, smart phones, social media platforms, computer software applications, etc.) for information access and communication
- Reference management software (e.g. *Refworks*, *Zotero*, *Mendeley*, *Endnote*, etc.)
- Plagiarism and how to avoid it
- Other (**please specify**)

D. Library and Information Science (LIS) disciplinary skills requirements

8. Which of the following disciplinary skills sets (**that is, application of knowledge belonging to the Library and Information Science (LIS) discipline**) would you expect your NUL librarians to possess to meet your library related information needs as an undergraduate student? (You may tick more than one option.)

- Information finding (retrieval) skills (for online and print sources)
- Internet searching skills (e.g. use of search engines)
- Ability to use technology in various forms to deliver effective library services
- Ability to search electronic information databases and journals
- Bibliographic referencing skills (e.g. using *Refworks*, *Zotero*, *Mendeley*, *Endnote*, etc.)
- Other (**please specify**)

E. Generic skills

9. Which of the following generic skills (**that is, transferable skills that apply to all disciplines or professions**) would you expect your NUL librarians to possess to meet your library related information needs as an undergraduate student? (You make tick more than one option.)

- General computer literacy
- Communication skills (oral and written)
- Interpersonal skills
- Listening skills
- Customer service/care
- Social media skills
- Teaching and training skills
- Online teaching skills
- Learner focus
- Referral skills
- Other (**please specify**)

F. Personal attributes

10. Which of the following personal attributes (**that is, appropriate attitudes, behaviours, values**) would you expect your NUL librarians to possess to meet your library related information needs as an undergraduate student? (You may tick more than one option.)

- Good general knowledge
- Patience
- Empathetic
- Reliable
- Flexible
- Responsive to others' needs
- Dedicated
- Passion for technology

Other (**please specify**)

G. Influence of technology

11. To your knowledge, what new technology has been introduced into the services of the NUL Library? (You may tick more than one option.)

- Computerized catalogue
- Online information databases
- Electronic journals
- Online reference services
- Online user education
- Reference management tools (e.g. *Refworks, Zotero, Mendeley, Endnote, etc.*)
- Social media notifications (e.g. Facebook, Twitter, Instagram, WhatsApp, Flickr, SMS, etc.)
- Other (**please specify**)

H. Adapting to technological changes

12. NUL librarians are embracing technological change in their delivery of resources and services to humanities undergraduate students.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I. Education and training

13. What qualification do you believe your NUL librarians should possess? (You may tick more than one option.)

- Relevant Library and Information Science (LIS) qualification
- Relevant subject degree (e.g. major in English, History, Philosophy, etc.)
- Information Technology (IT) related qualification (e.g. Information Technology, Information Systems, Computer Science, etc.)

Other (**please specify**)

14. What level of education do you think your NUL librarians should possess?

Undergraduate

Postgraduate

Other (**please specify**)

Thank You. Your time and effort are appreciated.

Please hand the completed questionnaire to a Lecturer or to a Class Representative in charge.

Appendix D

Ethics approval – UCT



Library and Information Studies Centre

University of Cape Town
Upper Campus

Private Bag X1, RONDEBOSCH, 7701 South Africa
Level 6 Hlanganani, The Chancellor Oppenheimer Library
Tel: +27 (0) 21 650 4546 Fax: +27 (0) 21 650 2529
E-mail: lisc@uct.ac.za
Internet: www.lib.uct.ac.za/lisc

2

Ref No.: UCTLIS201609-05

22 September 2016

Ms Mantoetse Pontso Nkuebe
Library and Information Studies Centre
Chancellor Oppenheimer Library
University of Cape Town

Ethics approval for Master's research

Dear Ms Nkuebe

I am pleased to inform you that ethics clearance has been granted by an Ethics Review Committee of the Library and Information Studies Centre, Faculty of Humanities, for you to proceed with collecting data for your Master's study on 'Knowledge and skills requirements of National University of Lesotho librarians in meeting information needs of humanities undergraduate students in the digital age'.

We wish you well with your data collection and the completion of your research.

Yours faithfully,

Signed by candidate

signature removed

Mr Richard Higgs
Chair: Department (LISC) Research Ethics Committee

Appendix E

Letter of authorization for data collection – NUL

THE NATIONAL UNIVERSITY OF LESOTHO

Telephone: +266 5221 3700
 +266 22340264
 +266 22340601
Fax: +266 22340000
Website <http://www.nul.ls>



P O Roma 180,
Lesotho.
Africa.

OFFICE OF THE REGISTRAR

25th September 2016

REF: REG/ADM-1 .37
 LML/hyml

Mantoetse Nkuebe
University of Cape Town
Private Ba X3
Rondebosch 7701

Dear Ms Nkuebe

Re: Request for Data Collection at the National University of Lesotho

The National University of Lesotho (NUL) is in receipt of your application to collect data at this institution.

After careful consideration of all relevant facts, the University has agreed to allow you to continue with your assignment as requested. It is hoped that the research outcome will be beneficial to both the institution of Higher learning and the country at large.

By copy of this letter the Dean Faculty of Humanities is requested to assist you with all the necessary information you need to carry out your assignment.

Yours sincerely

Signed by candidate

signature removed

Cc: Pro Vice Chancellor
 Dean Faculty of Humanities

Appendix F

Letter of authorization to conduct interviews – NUL Library

NATIONAL UNIVERSITY OF LESOTHO

Telephone: + 266 22340468
+ 266 2221 7020
Fax: +266 22340231
Website: <http://www.nul.ls>



P.O. Roma 180
Lesotho
Southern Africa

Office of the Librarian

12 August 2016

*Mantsoetse Pontso Alice Nkuebe
University of Cape Town
Private Bag X3
Rondebosch 7701
CAPE TOWN

Dear Madam/Sir,

RE: KNOWLEDGE AND SKILLS REQUIREMENTS OF NATIONAL UNIVERSITY OF LESOTHO LIBRARIANS IN MEETING THE INFORMATION NEEDS OF HUMANITIES UNDERGRADUATE STUDENTS IN THE DIGITAL AGE

We thank you for the application that you submitted to the National University of Lesotho (NUL) Library to conduct interviews with Library staff. I am glad to advise you that the Library has approved your application to conduct the above-titled study.

By copy of this, the Heads of Divisions and all respondent Library staff are urged to kindly offer you the assistance you will require.

Let me take this opportunity to wish you well in your worthy enquiry.

Yours sincerely,

Signed by candidate

signature removed

(PhD)