



**Utilisation of library websites for information literacy delivery in five selected  
universities in South Africa**

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### **Declaration**

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Signature...

Signed by candidate

Date: 26 January 2018

## **Dedication**

*“It always seems impossible until it’s done” Nelson Mandela*

This work is dedicated to my Grandmother Hilalia Mukwanambwa Kawili, my father Leo Tegelela Iyambo, my husband Likius Kambata Iyambo, my children; Laimi Niita and Otilie Tunombili Iyambo, my siblings, and cousins. Thank you all for the moral support, time, love and courage rendered during my studies.

I have done this work in memory of my late mother Rauna Ndapewaoshali Abraham, and my two late grandfathers Simon Shidute Abraham and Alfeus Iindongo Iyambo. You are dearly missed.

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## **Abstract**

The purpose of this study was to investigate how library web sites are used in delivering information literacy to a diversity of users in five selected universities in South Africa. Drawing from the Association of College and Research Libraries' information literacy framework for higher education, the study sought to establish how information literacy content is designed into curricula and delivered. It further established tools that are used to deliver information literacy via library websites, strategies that are adopted in managing the process as well as the assessment tools used to test students' learning of information literacy. Ultimately the study established the challenges librarians encounter when developing information literacy curriculum/content and using technologies on their web sites. This was done to improve the current practice of information literacy programme delivery at the University of Namibia libraries. The study was guided by Constructivism paradigm and the framework for Information Literacy Competency for higher education. The study employed a qualitative approach in which research participants were purposely selected. While a checklist was used to collect data from the library websites, interviews were used to collect data from librarians who are information literacy coordinators in their institutions. The study found that information literacy content encompasses the ability to identify an information need, locate, evaluate, use and manage information legally and ethically. Academic libraries used various strategies to inculcate information literacy skills among others includes Libguides, YouTube, videos, presentations in PDF and Microsoft Words, blog, Ask a Librarian and live Chat with a Librarian. Technologies such as Camtasia, Articulate software for videos, games, audios, quizzes creation, and Libguides are often used to develop and deliver information literacy content through library web-pages. Challenges that were highlighted by the librarians include inability to identify appropriate technologies to use and in most cases, librarians depend on IT personnel for assistance. The study will be useful to libraries which are in the process of developing online tutorials; it has potential to help librarians to identify appropriate technologies and processes involved to effectively develop tutorials that will eventually transform library websites into educational and learning platforms.

## **List of acronyms and abbreviations**

ACRL - Association of College and Research Libraries

CALICO - Cape Library Co-Operative

CGI – Computer-Generated Imagery

CHELSEA - Committee for Higher Education Libraries of South Africa

CPUT - Cape Peninsula University of Technology

ILC – Information Literacy Committee

INFOLIT – Information Literacy -a five years project aimed to promote information literacy among five tertiary institutions in Western Cape

LMS – Learning Management System

ICT – Information Communication Technology

IT - Information Technology

OPAC - Online Public Access Catalogue

PDF – Portable Document Format

PhD – A Doctor of Philosophy

HTML – Hypertext Mark-up Language

RSS – Really Simple Syndication

SA – South Africa

SCONUL – Society of College and University Libraries /Standing Conference of National and University Libraries

WMV – Windows Media Videos

UCT - University of Cape Town

UKZN – University of KwaZulu Natal

UWC- University of Western Cape

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## **Chapter One: Background of the study**

### **1.1 Introduction**

Information literacy has become a crucial skill for functioning in the digital information age. It plays a major role in students' lives by providing them with research skills for academic success. Academic and research libraries are some of the main sources of scientific and academic information where students access various information sources and platforms. Libraries provide information in different formats and platforms. This means that students need to acquire appropriate skills to effectively access and harness information resources in multiple formats from various platforms. As a result, information literacy has become a primary focus in academic and research libraries globally to ensure that students do not only acquire critical competencies but also appropriate skills to optimally utilise information sources at their disposal.

Different authors define information literacy as a set of abilities that allow a person to recognise when there is an information need, knowing how to retrieve, evaluate, and use it in an ethical manner (Dadzie, 2007; Chipeta, Jacobs & Mostert, 2009; Moyo & Mavdza, 2016). Having knowledge of how to access and use library resources often results in optimal utilisation of library resources and is likely to yield better academic performance. Literature reveals that information literate individuals are able to recognise their information needs and possess skills to identify, retrieve and synthesise the needed information (Baro & Zuokemefa, 2011; Aharony & Bronstein, 2014; Oyewo & Samuel, 2016). Baro and Zuokemefa (2011) further pointed that information literate students use library resources more often than information illiterate students and perform better academically. Information literacy means not only being aware of an information need, but also various kinds of information sources to consult to fulfill the information needs. Moreover, it grounds students and people in general with the ability to establish areas where to find the needed information, to critically evaluate information sources and ultimately use the information ethically.

Institutions of higher learning offer a variety of academic programmes on both full-time and, part-time using contact blended learning, and/or online distance learning modes of delivery.

There is a diverse pool of students enrolling in these institutions from different geographical locations, socio-cultural backgrounds, and socio-economic statuses. While some students come from well-resourced communities others are from under-resourced communities and have had limited exposure to information resources and search strategies. Nonetheless, irrespective of their unique background, discipline, programme, and level of study; students need to demonstrate competency in reading and writing; literature searches and analysis; citation and referencing; ethical use of information when preparing assignments and research projects such as theses and dissertations. Based on students' background, the university environment poses different challenges to students; as such students might prefer to engage with learning material and information literacy training in particular, in a manner that suits their capabilities, learning styles, lecture timetable and resources they have as individuals. Consequently, information literacy programmes are delivered using modes such as face-to-face sessions, online lessons and /or blended delivery; and in most instances, library websites are used to either inform the users about the information literacy programmes or as platforms for online information literacy delivery. Online teaching has become very popular in the digital era; a testimonial example is popularity of Massive Open Online Courses. There are studies such as Mahmood and Richardson (2011); Blummer and Kenton (2015) that show that libraries are already embarking on delivery of online information literacy. The purpose of this study is, therefore, to investigate how the library websites are used for delivery of information literacy in five selected universities in South Africa, namely the University of Cape Town, University of Western Cape, Cape Peninsula University of Technology, Stellenbosch University, and the University of Witwatersrand.

This chapter serves as an introduction to the dissertation; it presents the conceptual framework for the dissertation, the research problem and research questions, the purpose of the study, the significance of the study, limitations and delimitations of the study, and dissertation outline. The next section therefore is an articulation of information literacy conceptual framework to help unpack this key term in the context of this study.

## **1.2 Background of the study**

### **1.2.1 Information literacy conceptual framework**

The term information literacy was developed in 1974 by Paul Zurkowski who recommended a need for global information literacy (Jiyane & Onyancha, 2010; Aharony & Bronstein, 2014). In the 1980s, the concept of information literacy substituted the initial concepts of user education and library skills (De Jager & Nassimbeni, 2002). According to Dadzie (2007:267), several initiatives were developed in both developed and developing countries to guide information literacy practices and also to emphasise its necessity. These initiatives include:

- Australian and New Zealand Information Literacy framework;
- Association of College and Research Libraries (ACRL) Framework for Information Literacy for Higher Education;
- Guidelines for Instruction Programs in Academic Libraries established by ACRL;
- Information Literacy Competency Standards for Higher education;
- Objectives for information literacy Instruction: a model statement for academic Librarians, Assessing Student Learning Outcomes in Information Literacy Programs; and
- Seven pillars for information literacy by Standing Committee of National and University Libraries (SCONUL).
- A localised information literacy theoretical framework to guide university libraries was developed by Committee for Higher Education Libraries of South Africa (CHELSA) in 2007.

Since the inception of the standards and guidelines outlined above, at the time of writing this dissertation, the ACRL Framework for Information Literacy for Higher Education, adopted in January 2016, was the current framework predominantly in use both in Europe and African academic libraries to prepare students to become critical thinkers and information literate individuals (Moyo & Mavodza, 2016). The Framework was developed after 15 years of ACRL Information Literacy Competency Standards for Higher Education that used to focus on the traditional way of finding, evaluating and using information, ethically, but did not look at how information is created and disseminated in the digital era. The aim of ACRL revision from

standard to framework was to ensure that there is response to the current digital environment we live in by encompassing other literacies such as “Transliteracy, media literacy and digital literacy” (Cahoy, 2013:148; Banks, 2013:186; Creed-Dikeogu, 2014:42 & Association of College and Research Libraries [ACRL], 2016:15).

The ACRL Framework for Information Literacy for Higher Education is referred to as Framework because “it is based on a cluster of interconnected core concepts, with flexible options for implementation rather than on any prescription enumeration of skills” (ACRL, 2017:01). The Framework narrates six information literacy frames within which knowledge practices and dispositions for students are outlined. The first frame is related to “**authority of information resources**” that is constructed and contextual depending on the creator’s expertise and credibility, nature of information needs and context of information use. In this case individuals who possess information literacy skills have abilities to critically examine the accuracy, reliability and suitability of information they intend to use to fulfil an information need. It further encourages them to utilise legitimate information sources by critically evaluating information sources at their disposal before use (ACRL, 2016). The second frame which is related to “**information creation as a process**” refers to having understanding that information is made available in different formats and disseminated in various ways. Information literate individual require consult different sources in different kinds in order to fulfil a need or purpose. Such individuals may “recognise the implications of information formats that contain static or dynamic information and are able to monitor the value that different information sources have” (ACRL, 2016:5). There are frames on “**value of information**” which “refers to understanding that information possesses several dimensions of value, including as a commodity, as an education influence and negotiating and understanding the world” (ACRL, 2016:7). In this case, information users will understand what plagiarism is, acknowledging people’s work or ideas and understanding the importance of citation and references of the information sources used. **Research as inquiry** refers to ability to locate appropriate resources using different retrieval systems, ability to develop search strategies based on the problem at hand to locate relevant information. **Scholarship as a conversation** refers to engagement between knowledge creators and information users about sources of information, mode of delivery and gives credit to previous researches. While **searching as a strategic exploration** refers to an information literate

person who possess an understanding of the task or need at hand that will eventually direct the information seeker to identify, develop search strategies and locate the needed information using appropriate information retrieval tools.

The digital age has changed the way information is stored, retrieved, and accessed. The internet and the World Wide Web and its ubiquity render easy and discernable information; it offers both reviewed and none reviewed information. As a result, misinformation and disinformation are quite common online. Recently, fake news has been permeating our communities and sometimes creating false alarms thus causing havoc and instability. It is therefore indispensable for students to acquire appropriate skills to access, use and evaluate information to determine the credibility and authenticity of numerous information sources at their disposal (Banks, 2013). Consequently, information literacy is redefined by ACRL (2016:9) as the “set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning”. In this study, information literacy as a term is conceptualized and framed from the ACRL (2016) definition and framework. In the interest of acknowledging information literacy developments in African context especially in view of decolonization movement, the next section discusses information literacy in South African universities as a context that sets parameters for the current study.

### **1.2.2 Information Literacy in South African universities: a contextual setting**

Academic libraries have realised the importance of information literacy and recognised the need for standards and benchmarks to measure information literacy practices. Hence, international information literacy agencies such as ACRL, Society of College, National and University Libraries (SCONUL) and Council of Australian University Librarians were adopted in many South African universities to provide guidance on information literacy practices despite the uniqueness of SA (Moyo & Mavodza, 2016).

Considering transformation and decolonisation, due to the uniqueness of SA, a localised information literacy theoretical framework to guide university libraries was developed by Committee for Higher Education Libraries of South Africa (CHELSA) in 2007. CHELSA

developed guidelines for conducting information literacy in South African context in line with international ACRL standards; which are attuned to the following strands:

1. To familiarize users with library and information services, facilities and use it independently.
2. To find information using different information retrieval tools such as library websites and online library catalogue.
3. To choose and utilise numerous information sources available in different formats
4. Access, retrieve, and evaluate electronic information for academic use.
5. Use various electronic databases for information for academic and research purpose.
6. Understand the ethical issues of copyright and plagiarism and apply the Harvard referencing method that complies with International Standards for the academic purpose to support research (Esterhuizen & Kuhn, 2010:102; Moyo & Mavodza, 2016:101).

In the interest of understanding information literacy in the historical context of South Africa, the researcher had a glimpse of literature in previous decades. Seemingly information literacy in South Africa was pioneered in the Western Cape Province from the INFOLIT project. According to Sayed and De Jager (1997) as well as University of Cape Town (UCT, 2017), notable information literacy initiatives have been carried out of which some resulted in the birth of Information Literacy INFOLIT project to advocate and promote the significance of information literacy in Western Cape Province. INFOLIT project had been working under the umbrella of libraries consortium called Cape Library Co-operatives (CALICO) which comprised of the University of Cape Town, University of Western Cape, University of Stellenbosch, and the then Peninsula and Cape Technikons. The consortium had further allowed students from the three universities and two Technikons to share the libraries catalogue, access to library accounts, extend loan period and promote the significance of information literacy programmes among five institutions (University of Cape Town [UCT], 2017). The fact that CALICO had the interest to assist with the governance of the INFOLIT project demonstrates the value it attached to information literacy and its successful evolution and implementation in the Western Cape. Although INFOLIT focused more on assessment of information literacy levels among students in the CALICO institutions, it is presumed that some of the spinoffs from the INFOLIT project led to the establishment of the Centre for Information Literacy at UCT or possibly influenced the

then School of Librarianship at UCT, to change its name to the Centre of Information Literacy. Sometimes universities' information literacy programmes are either offered as stand-alone or credit-bearing modules (Jiyane & Onyancha, 2010; Moyo & Mavodza, 2016). When information literacy programmes are not incorporated, library professionals negotiate with academics to conduct information literacy sessions during lectures of the academics concerned (Lockhart, 2015; Moyo & Mavodza, 2016). Although institutions of higher learning have encountered challenges in delivering information literacy education, there has been a remarkable success in implementation of information literacy programmes in many South African universities.

The Cape Peninsula University of Technology and the University of Pretoria have managed to embed information literacy into academic programmes (Esterhuizen & Kuhn, 2010; Moyo & Mavodza, 2016). De Jager and Nassimbeni (2003) maintain that UCT libraries' have long recognised the utilisation of information and the prominent role it plays among students and researchers. As a result, during the transformation and merger of departments at UCT in the late 1990s, a single semester course known as "Information Society: Tools and Skills" was developed to assist students in the Faculty of Social Sciences and Humanities with information searching techniques and strategies. During that time, the School of Librarianship underwent a metamorphosis and changed its name to the Centre for Information Literacy. This Centre was also established at UCT to provide information literacy interventions to ensure that information literacy education is incorporated in all academic disciplines (De Jager & Nassimbeni, 1998).

Since the researcher is also studying at the University of Cape Town, she observed that many of the South African universities have established Knowledge Commons for undergraduate students and Research Commons for postgraduate students equipped with skilled librarians as well as different information sources and technological tools to enable students to navigate numerous databases. However, Lockhart (2015) argues that students barely take information literacy training seriously if they know they are not academically assessed. In most cases, if not all, students tend to value information literacy training only in their final years when they are required to produce research reports. Hence, a need for information skills assessment was discovered and implemented in some universities such as at Cape Peninsula University of Technology to assess students' skills acquired during information literacy training and also to

ascertain whether the acquired skills are applied into students' academic activities (Lockhart, 2015). Currently, at Cape Peninsula University of Technology, information literacy is offered as a fully-fledged accredited compulsory to all first year students. Furthermore, a perusal of literature such as Mugwisi (2015) as well as Moyane, Dube, and Hoskins (2015) indicates that information literacy sessions are delivered through different modes such as tutoring, demonstrations and self-taught through library websites. Given that information literacy delivery has not been done satisfactorily through the library website at the University of Namibia.

### **1.3 Background to the research problem**

With digital and information and communication technology evolution, the way information is being accessed, used, and made available has drastically changed and this necessitates alterations in the delivery and promotion of information literacy programmes in academic settings. The researcher has observed for a number of years that, there has been poor utilisation of library websites at the University of Namibia as compared to the use of library websites in South African universities. Students from diverse background join universities to upgrade their knowledge and skills to secure better jobs. Some of these students have limited library and information skills; while others only know a traditional library, many have no prior exposure to libraries. Conversely, many young students because they are of the generation, demonstrate good knowledge of the internet and are conversant with usage of many information technology devices and according to Li, Leung, and Tam (2007:532), "the same students are comfortable with the fast-paced change in the digital environment, while others are unaccustomed to the rapidly changing academic and technological environment". It is against this background and context that interest was taken to research the use of library websites in the delivery of information literacy.

### **1.4 Research problem**

Despite the good knowledge in digital usage, students find it difficult to navigate assorted electronic library resources as sources of information due to students' geographical locations,

inappropriate communication tools and also unsuitable information literacy time allocation due to a tight academic time-table. Literature reveals that delivering web-based information literacy programmes will not only respond to hectic students' schedules, but will also promote information literacy programmes to digital generation students (Su & Kuo, 2010).

Thus, academic libraries should constantly develop strategies to educate students using sundry teaching modes to empower them for optimal benefit and use of various information resources that are not only multimedia but also in different formats. Information literacy programmes are one of the initiatives that academic libraries have put in the forefront to ensure that students are best equipped with necessary information skills to utilise heterogeneous global information resources and avoid unethical or mal-information practices such as piracy, plagiarism and inability to reference.

The researcher serves on the Information Literacy Committee (ILC) responsible for development and delivery of information literacy programme at the University of Namibia since January 2014 until present. In the interest of keeping abreast with the latest information literacy developments, various modes of its delivery and adaptation of best practice for the University of Namibia have to be done; but not much as far as information literacy delivery on library websites is concerned. Therefore, this study was aimed at establishing how library websites are used for delivery of information literacy programmes in five selected universities in South Africa in order to come up with the best practice for the University of Namibia.

### **1.5 The aim and objectives of the study**

The overall aim of this study was to investigate how the library websites are used to deliver information literacy to diversity to of users in five selected universities in South Africa in order to establish the best practice for adaptation at the University of Namibia. The study was aimed at addressing the following objectives:

- 1) To find out key content for information literacy that speaks to information literacy frames from top five SA universities.

- 2) To determine how to plan information literacy curriculum that speaks to information literacy frames and delivered through the library website.
- 3) To establish information literacy content delivery strategies common in the web-based learning environments.
- 4) To establish technologies often used in web-based information literacy delivery; and how these technologies are used for effective delivery.
- 5) To determine assessment tools and techniques used for information literacy via websites and how the tools and techniques can be used.
- 6) To establish the challenges often encountered in web-based information literacy delivery and how to address these challenges.

## **1.6. Research questions**

In order to achieve the above-mentioned objectives, the following research questions (RQs) were addressed:

RQ1: Which content is key for information literacy in order to comply with ACRL frames?

RQ2: How do academic libraries plan information literacy curriculum that speaks to ACRL frames and delivered through library websites?

RQ3: Which information literacy content delivery strategies are commonly used in web-based learning environments?

RQ4: What are the technologies often used in web-based information literacy delivery; and how are these technologies used for effective delivery?

RQ5: Which assessment tools and techniques used for information literacy via the websites and how are these tools and techniques used?

RQ6: What are the challenges often encountered in web-based information literacy delivery and how are these challenges addressed?

## **1.7 Significance of the study**

Although several studies have been carried out on information literacy programmes, there is no evidence of studies of this nature conducted in South Africa investigating the use of library websites in delivering information literacy education and training as well as curriculum in five selected universities in South Africa. As a result, this has led to a knowledge gap in the literature on how library websites are used to deliver and promote information literacy in academic libraries particularly in the African context. Therefore, this study is significant in the sense that it will be the first of its kind in South Africa while the findings will be applied in another neighboring country; Namibia. The study will particularly assist the researcher to adopt best information literacy practices and develop homogeneous information literacy programmes at the University of Namibia. Furthermore, the study will add value to the existing body of literature on information literacy worldwide.

## **1.8 Limitations and delimitations of the study**

This section presents some of the limitations and delimitations of the study.

### **1.8.1. Limitations**

There are numerous limitations that a researcher is likely to face when conducting research. Limitations are known as hindrances that a researcher may encounter during the research process, which he or she may have limited or no control over (Simon & Goes, 2013). Limitations may prevent the researcher from conducting the study as planned. Initially, the researcher had higher expectations when she conducted website analysis to find information needed to answer the research questions of the study. However, some library websites had incomplete content. The study targeted five university libraries but one of the prospective participants could not respond nor acknowledge the invitation. This therefore left the researcher with four participants. Due to poor internet connectivity and communication breakdown during data collection, the researcher failed to capture views of some respondents comprehensively.

Moreover, some tutorials required credentials to access them. As a result, the researcher could not browse certain tutorials in details. Five Information Literacy Coordinators from the particular university libraries were supposed to participate in the study. However, only four information coordinators showed interest to take part in the study.

### **1.8.2. Delimitations**

Simon (2011:2) defines delimitations as “characteristics that limit the scope and define the boundaries of the study”. The study was exclusively delimited to its outlined research objectives, research questions, theoretical framework, and research methodology. The study was further delimited to five South African university libraries, and how these university library websites are used in inculcating information literacy.

Furthermore, the size of the minor dissertation (25 000 words) and scope as well as the duration of the Master of Library and Information Science (MLIS) programme, were considered as delimitations of this study.

### **1.9 Dissertation structure**

**Chapter 1**, this is an introductory chapter that explains the structure of the research project that includes; background of the study, research problem, objectives and research questions, significance of the study, limitations and delimitations.

**Chapter 2** is the theoretical framework and literature review where critical and in-depth evaluation of previous related research will be conducted. This chapter will also cover the theoretical framework of the study.

**Chapter 3** covers the research designs, method, and instruments used to collect and analyze data.

**Chapter 4** summarizes and analyses the data gathered.

**Chapter 5** presents deliberations of the research findings and responds to the research questions. The chapter will also outline conclusions and recommendations as well as closing remarks on the study.

### **1.10 Summary**

This chapter introduced the research plan of the study. It gave the introduction, the information literacy conceptual framework, information literacy in Southern African universities, the background to the research problem, the research problem, the aim and objectives, the significance of the study, limitations and delimitations, and the structure of the research study. The next chapter provides a review of literature on information literacy and the theoretical framework of the study.

## **Chapter Two: Theoretical framework and literature review**

### **2.1. Introduction**

This chapter look at what a theoretical framework is, existing theories of Information literacy, theories adopted by related previous studies and in particular the theory the study adopted. The chapter further presents a review of literature on web-based information literacy content, teaching strategies, technological tools used to develop and delivery online based information literacy, web-based online assessment tools and the challenges encountered by librarians during web-based information literacy content development and delivery.

### **2. 2. Considerations for the theoretical framework**

The purpose of this section is to highlight the role of theory in research. It does not necessarily discuss the theoretical framework for the current study because such a discussion was presented as conceptual framework in section 1.3. The researcher feels that it is important to demonstrate that she considered theory so that her study does not appear like she totally disregarded theory and its role in research to demonstrate that she made a conscious decision to use a conceptual framework for guidance instead of a theoretical framework. The decision to use a conceptual framework is based on an understanding that a “conceptual framework clarifies concepts and provides a context for interpreting the findings of the study while theory provides a stance or point of focus from which to tackle an unknown specific area of research (Imenda, 2014; Nalzar, 2012). Casanave and Li (2015: 107) describe conceptual framework as the integration of literature review and synthesis of relevant concepts in a given study while a theoretical framework attempts to clarify how concepts are related”. Given that information literacy has been researched on for many years, it is considered as a known area; and this study is investigating how *information literacy*, viewed as a concept and not as a theory in this study, is delivered on library websites in selected universities in South Africa.

On the other hand, a theoretical framework plays a pivotal role in guiding the entire research process. “Theories are constructed in order to explain, predict and master phenomenon such as

relationships and events” (Fadul, & Estoque, 2011:47; Hardin, & Kaplow, 2016:147). Theoretical frameworks ensure proper organisation of the study and help the researcher to interpret the results effectively (Hardin, & Kaplow, 2016). It makes research findings meaningful and interpretable as well as provides direction for investigation of the problem. Furthermore, “it helps the researcher to identify measures for use in validating the outcomes of the study” (Hardin, & Kaplow, 2016:147). Hence, a theoretical framework works as “blueprint” for the entire research study. “It serves as the guide on which to build and support your study, and also provides the structure to define how you will philosophically, epistemologically, methodologically, and analytically approach the dissertation as a whole” (Grant & Osanloo, 2014:13).

There are several information literacy models and related theories found in the literature. In some models, information literacy is presented as “a way of interacting with information” (Helminen & Katjihingua, 2012:203). According to Bruce and Lupton (2006), there are six frames for information literacy education, and these include content, competency, learning to learn, personal relevance, social impact and relational frames. In addition, there is also “Big6 Skills model by Eisenberg and Bob Berkowits (1990), the information Search Process by Kuhlthau (1993), the Research Process model by Stripling and Pitts (1988), Pathways to Knowledge by Pappas and Tepe (2002) and last but not least Seven Pillars of Information Literacy model exist” (Chipeta, Jacobs & Mostert, 2008:47). Each of these theories may be applied where it is deemed fit within information literacy education.

To deeply understand and gain insights into the research problem and research questions pertaining to information literacy training through web sites and the content, thereof, constructivist theory was considered to guide the study. The content theory basically looks at information literacy core topics taught and teaching methods used to ensure that students are equipped with appropriate knowledge and ability to construct meaning out of it. Constructivism is regarded as a fundamental pillar to students' centered approach to teaching and learning that emphasizes on learning through students' participation and engagement during lectures and beyond. It further enables students to understand and construct meaning through hands-on activities. Moyane, Dube, and Hoskins (2015) stress that constructivism assists students to make

sense of what they learn and apply it in real life activities and situations. The study further adopted the ACRL Information Literacy Competency Standards for higher education that provides essential aspects to be considered when developing information literacy programmes in institutions of higher learning (Bundy, 2004). These standards typically aim at increasing individuals' ability to recognize when there is an information need, formulate a search strategy, critically evaluate information sources, analyse, synthesise and use the information to fulfill educational, social and economic information needs. Although transformation and decolonisation are very important, in the interest of globalisation and an understanding that no institution, organisation, country or continent operates in isolation, it was imperative to consider predominant information literacy frameworks, standards and models. A practice that was adopted by CHELSA in 2007 as alluded to in section 1.3. Therefore, is very important that aligning institutional information literacy content to ACRL standards for Higher Education is not perceived as being colonially inclined and stereo typed but as a benchmarking strategy. The following studies have adopted various models:

- A study by Li, Leung, and Tam (2007), entitled "Promoting information literacy through web-based instruction: the Chinese University of Hong Kong library experience" used by the ACRL Framework for Information Literacy Competency Standards for Higher Education.
- A study carried by Baro and Zuokemefa (2011), entitled "Information literacy programmes in Nigeria: a survey of 36 university libraries" has used ACRL framework.
- A study by Helminen and Katjihingua (2012) on information literacy of law students has recognised the six frames as information literacy theory.
- A study by Baro, Seimonde and Godfrey (2013), entitled "Information literacy programmes in university libraries: a case study" framed by ACRL standards.
- A study by Magnuson (2013) on Web 2.0 and information literacy instruction; aligning technology with ACRL standards was informed by constructivism and ACRL information standards.
- In a study by Sheret, L. and Steele, J. A. (2013) on "Information literacy assessment: keep it simple, keep it going" has also adopted Framework for Information Literacy Competency Standards for Higher Education was adopted.

- Another study conducted by Moyane, Dube, and Hoskins (2015), entitled “Evaluation of user education programmes for postgraduate students in the school of management, Information Technology and Governance at the University of KwaZulu-Natal” was informed by constructivism.
- A study by Fullard, A. (2017) titled “Using the ACRL framework for information literacy to foster teaching and learning partnerships” also adopted a Framework for Information Literacy Competency Standards for Higher Education.

The above information is presented to demonstrate that it is quite common for research to be framed around theories, models and frameworks including those outside their institutions, countries or continents. As mentioned earlier, this study is guided by information literacy conceptual framework presented in section 1.3.

### **2.3. Literature review**

This section present literature review to demonstrate that the researcher examined previous research studies related and relevant to the research topic under investigation. A literature review is simply a collection of findings of previous studies in relation to the problem being investigated. According to Blaxter, Hughes and Tight (2010:121) and Booth, Papaioannou and Sutton (2012:1) literature review is a ‘systematic, explicit, and reproduced method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners’. Equally, a literature review is a process of reviewing similar or related studies on the research problem under investigation (Bless, Higson-Smith & Sithole, 2013).

The overall aim of literature review is to demonstrate to the readers the significance of the study despite the existing literature, defend the choice of the research topic and how it fits into the broader context (Olivier, 2012). Literature review plays a major role in research as it helps the researcher to understand what has already been researched on and identify areas which require further exploration (Blaxter, Hughes & Tight, 2010; Olivier, 2012). Furthermore, a literature review is very crucial as it prevents duplication of similar studies, identify reliable instruments

used and last but not least to desist from reiterating similar mistakes made by previous scholars (Mouton, Johann, 2001; Blaxter, Hughes & Tight, 2010).

Thus literature review serves “as a foundation of research that enable a researcher to formulate research questions, and to determine the focus of the study. It establishes a “historical background of the study provides a focus, and enables the researcher to develop a conceptual framework for the research” (Mertens, 2015:119).

The literature review of this study was basically guided by the research objectives as well as the research questions and therefore it is organized under themes such as development of information literacy programmes and information literacy content; information literacy delivery and teaching strategies; information literacy applications and technological tools; information literacy, information literacy assessment strategies and techniques; and challenges encountered in web-based information literacy delivery and how these challenges are addressed.

### **2.3.1 Information literacy programmes and planning**

Information literacy programmes aim at improving library skills of various user groups in academic settings and public libraries. It helps potential library users to acquaint themselves with available assorted information sources, search strategies, information resources and their metadata facilities and numerous services the library offers. To attain the appropriate library skills, Information Literacy Competency Standards for Higher Education should be adopted as a guideline in creating information literacy content for both traditional lectures and online tutorials (Buddy, 2004; Li, Leung & Tam, 2007:6). Furthermore, Mole et al. (2015) have stressed that online-based programmes should reflect Information Literacy Competency for Higher Institutions standards where the purpose of information literacy programme, expected learning outcomes, and personal assessment through practical exercises and quizzes are featured.

According to Jiyane and Onyancha (2010); Su and Kuo (2010); Association of College and Research Libraries (ACRL, 2016), an information literate student must be able to:

- Determine the extent to which information is needed
- Access the needed information effectively and efficiently

- To critically evaluate information sources and information retrieved
- Incorporate selected information into his or her knowledge base
- Use information effectively to fulfill a certain purpose
- Understand the ethical use of information.

In the digital age, disseminating and accessing information online has become essential in universities and the public at large. Given that this research is conducted in an academic context; in higher education in order to improve information literacy service at University of Namibia, it is more inclined to an academic setting; that is higher education context. This does not dispute the fact that information literacy is quite fundamental and phenomenal in public and school libraries. As mentioned in section 1.2, universities offer programmes on different modes to accommodate as many potential students from all walks of life. As such, an academic library requires offering a flexible environment to accommodate both distance students and net generation students. Blummer and Kenton (2015) mention that the implementation of online library skills tutorials will enable students to study the materials at their own time, wherever they are and at the same time reduce staff shortages and workload in libraries. In the studies conducted by Lumande, Ojedokun and Fidzani (2006); Chen and Lin (2011) and Mole et al. (2015) claim that online information literacy programmes allow students to learn independently which eventually saves them time and space. Moreover, online tutorials also allow students to repeat tutorials as much as they wish at their own pace to master the content (Su & Kuo, 2010).

From literature, one deduces that online resources are likely to be intellectual capital to leverage for a much longer period for enhanced learning, thereby impacting on slow learning students. For instance, videos that have been produced to cover citation and referencing lessons can be uploaded on the website. To librarians, it will be a once off intensive preparation of a video production; while to students it is access to a video that they can download to view as many times as needed anytime anywhere. In order to ensure the above are met, it requires proper training and awareness among librarians. It requires library management support, good internet connection, equipment and infrastructure, good collaboration between library staff, academics, and the library users, good marketing strategies and funds (Thanuskodi, 2012).

Lumande, Ojedokun and Fidzani (2006:71) indicate that during the curriculum development, the curriculum components should encompass “the concept of information, organisation of information access tools, objective, content, summary and assessment”.

In order to be successful in planning and implementing online based information literacy programme, the objectives, the course content and learning outcome should be clearly spelled out (Resor-Whicker & Tucker, 2015:93). Once the course content is well defined, software and other related facilities should be identified and acquired for recording to take place.

### **2.3.2. Web-based Information Literacy content**

To gain understanding of and connection between contemporary and traditional information literacy programmes, several studies were reviewed and one finds that many have been conducted on information literacy programme in different settings looking at both traditional and modern ways of information literacy delivery and content thereof in academic libraries. Face-to-face delivery is largely regarded as an effective way of teaching information literacy; however, students may encounter challenges in attending such training (Su & Kuo, 2010) for various reasons such as limited time, exhaustion after long lecture attendance, pressure of deadlines or lecture timetable clashes. From studies such as De Jager, Nassimbeni and Underwood (2003) and Jiyane and Onyancha (2010), one deduces that there are similarities on information literacy content taught in academic libraries, the popular topic for information literacy content has been on how to use Online Public Access Catalogue (OPAC), electronic resources searching, development of search strategies, ethical use of information including citation and referencing. Similarly, Li, Leung and Tam (2007) as well as Chen and Chengalur-Smith (2015), reveal that web-based tutorial also encompasses “developing search strategies, use of the library catalogue, databases’ searches, internet use, evaluation and citing of information”. The study further reveals that each module consists of learning outcomes, core topics to be taught, key points, conceptions and assessment quizzes to test students understanding of the content (Li, Leung & Tam, 2007). In the same vein, Dadzie (2007) and Yang (2008) observed that information literacy course content mostly focuses on the use of library resources with emphasis on critical skills related to computer literacy, web applications and tools for digital information resources, web-based

search strategies, bibliographic and full-text database searching, information sources and their metadata. All these are mostly designed by librarians as part of academic support designed to empower students with an ultimate aim of making sure that they perform well academically and succeed to complete their studies and graduate on time.

Baro and Keboh (2012); Sheret and Steel (2013) and Mole et al. (2013) found that academic libraries' information literacy programmes include library tours, introductory and advanced information skills, research skills, developing information search strategies, information evaluation criteria, and assignment based information searching skills, use of appropriate referencing styles and an overview of information literacy. Moyane, Dube and Hoskins (2015) point out that the University of KwaZulu Natal Library offer library orientation at the beginning of each academic year and collaborate with academics to schedule training on electronic resources and search strategies during the course of the year.

Su and Kuo (2010) carried out a study that looked at the design and development of web-based information literacy tutorials. They found that the tutorials comprised of content similar to content mentioned in many other studies such as those discussed earlier in this chapter. Nonetheless, this study has extended its content by looking at reservation of library materials, call number, reference resources, electronic mails, differentiation between peer-reviewed journals from none peer reviewed, and classification schemes. Notably, some online based information literacy content covers virtual library tour where students are introduced to the library building and its content before entering the library (Su & Kuo. 2010). These are some of the important aspects of information on literacy in the digital age. Worth noting, for information on literacy content for postgraduate students, is a study by Secker and Gibson (2010) on information literacy course for doctoral students, which indicates how students are trained to conduct literature searching through several search engines. From the study, one deduces that postgraduate students mainly need information search strategies for various platforms.

In another study by Obradovich, Canuel and Duffy (2015), a survey on online Library services reveals that most of the instructional videos that were created consist of discovery searching tools, databases searching, use of citation management software such as Endnote, Zotero or RefWorks, searching strategies, formulation of research questions, technical skills such as

photocopying, printing and scanning use of interlibrary loan and document delivery services, reservation and recall of library items, use of Boolean operators, use of self-checkout machines and also how to access online resources remotely through off-campus logins. While on some academic library websites, there are videos containing general instructions on how to use printing, copying services and also basic information technology skills (Obradovich, Canuel & Duffy, 2015). Despite the availability of instructional videos on academic library websites, the study reveals that availability of such services is not well marketed and only a few users are aware of it. Ganaee and Rafiq (2016) the content available on libraries in Pakistan is more on circulation of library materials, periodicals and operational hours.

### **2.3.3 Teaching strategies**

Li, Leung & Tam (2007) maintain that web-based information literacy tutorials should encompass numerous learning activities in the form of games, and quizzes where questions and answers are provided immediately for students' to measure their understanding. In the same study, it emerged that the use of YouTube and Libguides are the most prevalent techniques used for delivering information literacy content. Apart from the above-mentioned learning objects, the study also points out that community libraries use Voice Thread to train users on the utilisation of the library. Swarm, Vincent and Gordon's (2013) in their study on technologies for delivery of information literacy to students at remote areas, proposed the use of Adobe Connect and Skype for Business to accommodate multiple classes at multiple locations to meet students' learning preferences. Blummer and Kenton (2015) indicate that 90% of library websites which were analysed utilise one or more web 2.0 tools to deliver information literacy content. These web tools include podcasts, Libguides, Facebook with video content and instructional videos which are either incorporated into websites or accessible via YouTube. Many libraries incorporated both instructional audio and videos in Libguides to enable students to learn in various ways (Rush & Stott, 2014; Blummer & Kenton, 2015). However, the study indicates that librarians used more Libguides to provide course guides and databases' lists instead of providing information literacy training. Obradovich, Canuel and Duffy (2015) in their survey revealed the use of online tutorials to provide guidance on video creation so that they are used for flipped

classroom delivery. For effective delivery, the study noted that the video content is made available in different formats such as flash, MP3, MP4, Window Media Videos (WMV) and narrative notes of videos can be Portable Document Format (PDF) files, Hypertext Markup Language (HTML) and word documents in order to accommodate diverse students' devices and learning styles.

In other separate studies, information literacy sessions are delivered through numerous platforms such as presentations, live demonstration and hands-on activities which are accessible through learning management software called Moodle (Dadzie, 2007; Secker & Gibson 2010). Both handouts and presentation slides can be used to teach information literacy. During hands-on activities, students are encouraged to search for information in relation to assignments or research topics at hand. In the online-based information literacy tutorials, literature reveal that majority of academic libraries incorporate videos on their websites and create links to YouTube platform to reach out to as many users as possible (Obradovich, Canuel & Duffy, 2015). These tools allow students or library users not only to learn to locate library materials, search databases but also to engage with library staff members via chat platforms.

Embedding information literacy into the academic programmes or within specific subjects is found to be an effective practice to enhance information literacy skills among students. This requires a good and strong relationship between the library and academic educators. By so doing, it allows the library to market its services and collections effectively. Furthermore, this will allow the library to be visible in its pertinent role it plays in students' academic lives and beyond (Lo & Dale, 2009; Detlor et al., 2011). Likewise, the tutorials can also be promoted to students via research guides, essay guides and classroom teaching and learning as a way to improve their understanding of information resources available to them and hopefully this would improve their grades (Scaramozzino, 2008).

#### **2.3.4 Technological tools**

Libraries are constantly changing from being traditional libraries to modern libraries by incorporating web 2.0 tools into its services delivery. Web 2.0 makes information sharing, dissemination, communication and collaboration among librarians and its users possible

(Thamuskodi, 2012). This has enabled librarians to use various tools to teach information literacy content. However, it is essential to know the type of content that is to be presented, in what suitable format in order to select the right technology that meet the method of instruction. Furthermore, “the technology should match the intended learning outcomes” (Barnhart & Stanfield 2010:502).

Li, Leung and Tam (2007:536) and Otto (2014) indicated that Flash, HTML, JavaScript and CGI scripts were used to create online-based tutorials. Blogs, Wikis, Social Bookmarking sites, YouTube and, Screencast softwares are used to organise and deliver content for information literacy (Luo, 2010; Azizinezhad & Hashemi, 2011; Sidek & Yunus, 2012). Literature has also revealed that Web 2.0 technology tools such as “podcasts, blogs, social networking platforms, wikis, Libguides, Springshare’s cloud computing content management system and YouTube are recognised as useful tools to deliver information literacy content” (Bowles-Terry, Hensley & Hinchliffe, 2010; Ganaee & Rafiq, 2016). Bowles-Terry, Hensley and Hinchliffe (2010) emphasise that videos are good tools to use especially when the Ask-a-Librarian service is not available. Click and Petit (2010) and Rush and Stott (2014) stressed that social networking sites are useful platforms to promote instructional videos. Su and Kuo (2010) found that screen recording and animation software are used to create tutorials with voice-over narration and flash animation. In the same vein, Blummer and Kenton (2015) state that video sharing, content management software, and Vimeo are used to create online information literacy content. Barnhart and Stanfield (2010) on using web conferencing to deliver information literacy training mention that Wimba, Elluminate and Adobe connect are other web conferencing software that can be used for information literacy content delivery. Web conferencing tools allow the instructor to archive information literacy session so that students who failed to attend, may access it. Nicholson and Nicole (2011) recommend and support Skype as it possesses all features needed for online instruction. The study reported that the Ohio University has used Skype to provide reference services to its library users. Resor-Whicker and Tucker (2015:90) libraries have opted for video to teach information literacy concepts and searching of databases. This is because videos can be accessed through variety of devices such as laptop, cell phones and tablets.

Ganaee and Rafiq (2016) studied Web 2.0 tools adopted by Pakistan's libraries. Their study found that libraries use Facebook, blogs, Twitter, Really Simple Syndication (RSS) feeds, instant messaging and photo sharing. The study further indicated that social networking sites, Facebook in particular, is mainly used for marketing library services and resources. The Web 2.0 technological tools are flexible, easy to use and understand, can reinforce face-to-face library instruction and provide students with database search skills (Blummer & Kenton, 2015). Thus, in some academic libraries, information literacy content is created on multiple platforms to educate students on how to locate, evaluate, use, and search information from subject based databases.

Furthermore, literature has shown that video is the most useful tool for delivering information literacy content as it enables users to view them ahead of time thus enabling flipped classroom approach to teaching and learning; and they also become a resource that students leverage on to view whenever a need arises. It enables users to replay as many times as possible to master the content, it can be easily updated, accessed via multiple devices by multiple users at the same time, viewed universally and can be customized to a specific faculty (Mestre, 2012; Obradovich, Canuel & Duffy, 2015:756). Nonetheless, one still acknowledges the intensive work involved in preparation of video materials. Videos require a lot of time and resources to produce; a short video of 5 minutes often takes hours of preparation. However, the ultimate product, if well done, its benefits go a long way. Moreover, the study indicates that Camtasia and Jing software allows creating quality videos and librarians often find it quite user-friendly. Xu et al. (2015) found that libraries use a social networking tool "WeChat" to promote library services to users especially self-service for checking out books, issuing books and their renewal. WeChat is also very useful for obtaining library feedback and suggestions from users on how to improve library services; and serves as an effective channel of communication between the library and its users.

### **2.3.5 Information literacy assessment strategies and techniques**

It is important to indicate the value and contribution the academic libraries are adding to the development of students during their academic years. This sentiment is supported by Li, Leung and Tam (2007) who point out that evaluation and assessment forms are an essential component for evaluating the effectiveness of information literacy programmes to examine its effectiveness.

To determine how well students have acquired relevant library skills in order to be considered as information literate individuals, literature reveals that students' information literacy skills are assessed based on ability to articulate an information need, develop a clear search strategy, determine the quality and relevance of retrieved information, critically evaluate the authenticity, reliability, credibility, accuracy and validity of information and ultimately use the information found ethically (Mole et al., 2013:185). Students are also assessed on information literacy topics taught through assignment outcomes. However, information literacy sessions offered through non-credit bearing courses do not lead to any form of assessment or qualifications (Jiyane & Onyancha, 2010).

Literature also reveals that a number of tools and methods are used to gauge students learning outcomes; although quizzes and subject-based assessment are often the tools often used by many librarians (Sobel & Sugimoto, 2012). In the affirmative, Li, Leung and Tam (2007); Baro and Keboh (2012); Lockhart (2015) reveal that academic libraries use multiple choice assessment and quizzes which are designed using Computer-Generated Imagery (CGI) to test learning outcomes. This has in turn made some tertiary institution in South Africa to develop compulsory courses whereby students are issued with certificates (Lockhart, 2015). In addition, Baro and Kebo (2015) further indicate that students are also assessed during information literacy class sessions which often include practical exercises for students to work on. The same view is also shared by Yang (2009:686) who stresses that interactivity and multimedia are vital components in effective online tutorials' assessment. Chen and Lin (2010:412) emphasised the importance of assessment by stating that "evaluation of information skills training is regarded as a form of two-way communication, which helps to evaluate library performance, redesigning of the training content and also ability to employ different teaching methodology". Furthermore, it determines whether students are integrating the skills learned in their academic activities or not. For this reason, literature has recommended that assessment should be an ongoing exercise as this will encourage students to apply the newly acquired skills (Chen & Lin, 2010).

Secker (2010) and Jessey, Bhat and Rao (2016) indicate that there are two ways to assess students' information literacy skills namely; pre-course and post-course assessment. The pre-course assessment is carried out before the information literacy sessions and it aims at determining the knowledge gaps among students and what they already know in relation to

information literacy skills. The second assessment is called post-course assessment and is conducted after students have attended information literacy sessions. The aim of this assessment is to determine students' confidence, knowledge and skills in relation to the content that was taught during information literacy sessions. For instance, one can observe students' ability and confidence in using several search tools such as library databases and online library catalogs that were introduced to them. Pre-course and post-course assessment provides the "before and after" effect that can serve as testimonial data for the impact of information literacy training on students (Oakleaf, 2009). In the study conducted by Sobel and Sugimoto (2012) librarians determine students' information literacy skills through informal discussions and quizzes before and after information literacy sessions. Mole et al. (2013) indicate that questionnaires can also be used to evaluate students' skills. However, their study did not present the results obtained to determine its effectiveness as an appropriate assessment tool.

The need for students to optimally utilise information sources effectively has become essential in an academic environment. Information literacy training has become a vital aspect to ensure that students are well equipped with appropriate skills to cope with information presented on multiple platforms. Needless to say that the literacy training are essential for determining whether information literacy trainings conducted, have made an impact on students' information skills. The training are as well as to find ways to improve the programme where necessary. As Fain (2011:118) purports, "assessment is now a major portion of the work instructional librarians do, and to close the loop of assessment, librarians must use the knowledge gained through assessment to improve teaching and instruction". In the study conducted by Ganaee and Rafiq (2016) on Pakistan university library websites, they found that libraries use Google Analytics and frequency of website visits to conduct a comparative study with another university library in a similar context to conduct library websites evaluation.

It is evidently revealed by several authors that students who attend information literacy training demonstrate knowledge and are in a position to know when they have information needs and have ability to access, evaluate, use and acknowledge information sources that they have used in comparison to students who do not have the opportunity to attend information literacy sessions (Samson, 2010; Kavsk, Peklaj & Zugelj, 2016). It is also evident that students who attend

information literacy sessions are able to demonstrate knowledge in searching, writing a research report, developing search strategies effectively and they perform better academically (Kavsk et al., 2016). Fain (2011) assessed information literacy skills for first-year students enrolled in information literacy sessions from 2003 to 2007; and indicates momentous changes in the use of library catalog and numerous databases. However, Fain believes that students tend to pay more attention to what interests them most than what is useful for their academic activities.

### **2.3.6 Challenges encountered in delivering web-based information literacy**

According to Baro and Keboh (2012) lack of human resources knowledgeable in IT, lack of facilities, electrical power failure and lack of interest in information literacy by academics are some of the major challenges negatively impacting information literacy training sessions. Similar findings are also shared by Ganaee and Rafiq (2016) that lack of technical know-how on website maintenance, lack of coordination among librarians and IT personnel, power failure, poor internet connection, and unavailability of websites due to technical problems are among the issues raised concerning library websites. Obradovich, Canuel and Duffy (2015) state that it requires time to create instructional videos and information literacy contents in numerous formats that have to be maintained and updated regularly. As such, there is need to look at videos created by other libraries or vendors and use them according to terms and conditions of their licenses; if permissible create a hyperlink to such videos for easy access to students.

## **2.4. Summary**

This chapter has looked at what a theoretical framework is and its pertinent role in research. The chapter has also highlighted several existing theories of information literacy and models that other studies have utilized. It should be emphasized that the current study has employed a conceptual framework for guidance even though it has considered constructivism theory for theoretical framework. Furthermore, literature review was done based on themes such as information literacy programmes, information literacy content delivery of information literacy

via library websites, teaching strategies, technological tools assessment strategies and techniques and lastly challenges encountered when delivering online-based information literacy.

The major insights gained from the literature review are that there is a need to offer information literacy programmes in multiple modes to accommodate diverse library users and at the same time help the users to cope with vast information that is available in various formats. The reviewed literature reveals that it is crucial for librarians to consider ACRL standards when developing, revitalizing, and evaluating information literacy programmes. The standard further provides guidance for assessing information literate individuals.

The literature also shows that the content in web-based information literacy programmes mostly focuses on the use of both print and electronic resources, collections and services. It should also be noted that online based information literacy programmes curb challenges such as limited time, tight schedules, and workload, and enable library users to learn independently. It has emerged that games, videos, YouTube, podcasts, Facebook, Screencast, Camtasia, and Vimeo are considered to be effective tools in creating and delivering information literacy content. Furthermore, the studies have demonstrated the importance of conducting evaluation and assessment to determine the relevance and effectiveness of information literacy programmes in libraries. The next chapter presents the research methodology of the study.

## **Chapter three: Research Methodology**

### **3.1 Introduction**

This chapter presents the research paradigm, the research approach, the research design adopted, description of the population; sampling techniques, data collection tools and data analysis procedures. The chapter further discusses issues of reliability and validity in research, but also ethical considerations.

### **3.2 Paradigm**

From a research perspective, it is recommended that research work should be informed by a philosophical worldview. According to Creswell (2014) and Mertens (2015), major research paradigms, also known as a worldview in research, include positivism, postpositivism, constructivism, interpretivism, transformativism and pragmativism. It should be pointed out that research studies can be based on one or two of the above-mentioned paradigms depending on the nature of the problem being investigated. Considering the purpose of this study, the philosophical underpinning guiding this study is the constructivism. The reason being, constructivists believe that individuals seek to understand the world from its natural settings (Creswell, 2014). The researcher largely depended on responses from the respondents' and their sentiments to understanding the issue at hand. The researcher understood or constructed meanings when engaging individuals who were knowledgeable and were considered experts on information literacy delivery in their institutions.

Moreover, constructivist support interactive mode of data collection such as “interviews, observations, document reviews” and interpretations of data that are made in descriptive way (Mertens, 2015:19). Consequently, the researcher used documents reviews of websites and interviewed librarians. Constructivists further claim that using multiple data collection methods enables the researcher to validate findings and make inferences from the collected data (Mertens, 2015). The above statements do not only defend the researcher's choice of constructivism in this study, but also provide the rationale for situating this study within this paradigm.

### **3.3 Research approach**

There are three major types of research approaches; namely qualitative, quantitative and mixed methods. These research approaches can be used as a stand-alone approach or combined appropriately in any kind of research projects. Furthermore, the research approach is largely dependent on the nature of the problem being investigated, the personal experiences of the researcher and the audience the researcher is writing for (Creswell et al. 2007; Creswell, 2014; Mertens, 2015). Each type of research approach has a variety of research methods to collect and analyse the collected data (Walliman, 2011; Creswell, 2014). In addition, it is important to note that there always have to be a correlation between the research questions and selected research approach in order to achieve the intended research goals (Hesse-Biber, 2011).

This study is qualitative in nature and its data and discussions are focused more on the same. Qualitative research is defined as a “systematic collection, organisation, and interpretation of textual data” derived from a telephonically, face-to-face interaction or group conversation to understand a certain phenomenon (Grossoehme, 2014:109). It is used to explore the meanings of occasions or proceedings as experienced by individuals in their natural settings (Punch, 2009; Hesse-Biber, 2011; Grossoehme, 2014 & Creswell, 2014). On the same note, Lewis (2015:473) defined qualitative research as a “process that uses inductive data analysis to learn about the meaning that participants hold about a problem or issue identifying patterns or themes”. Qualitative research uses a variety of methods to collect data; for example participant/non-participant observations, semi-structured/unstructured interviews, document analysis, focus group discussions and audio and visual materials (Hesse-Biber, 2011; Creswell, 2014; Bertram & Christiansen, 2014).

The study adopted a qualitative research design in order to gain an in-depth understanding of the use of library websites to deliver and promote information literacy instruction in natural settings. Similarly, scholars have also emphasised that qualitative research relies more on interaction in order to obtain textual data. The study used interviews to collect data which has made a qualitative approach to be the most appropriate approach for the study.

### **3.4 Research design**

A research design is defined as a plan or strategy outlining steps to be followed when collecting and interpreting data. Thus a research design in general terms looks at all the issues involved in planning and executing a research project including procedures and methodology to be used to collect and interpret results. According to Punch (2010), a research design is a basic plan for a piece of research which includes four main ideas such as strategy, conceptual framework and the question of who or what will be studied. A research design is also about tools and procedures to be used for collecting and analysing empirical materials (Punch, 2010).

The study intended to investigate the usage of library websites in delivering and promoting information literacy programmes in five selected universities in SA. Due to the geographical nature of this study and the number of units involved, it is denoted as a case study. Mertens (2015:245) stated that “the more the study is a unique and bounded system the more it becomes a case study”. Punch (2009:119) and Hesse-Biber (2011:256) describes “case study as an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, decision, process, an incident, policy, institution, programme, or system in a real-life setting”. This study collected data from document analysis of library web sites and interviews with libraries to achieve in-depth exploration.

Likewise, Hesse-Biber (2011) and Mertens (2015) defined a case study as an investigative approach used on an individual, event, programme, or a group of individuals/societies/institutions to describe and have in-depth understanding of a phenomenon.

It is an evidence-based approach that gives an in-depth understanding of specific events in order to make an informed decision (Hesse-Biber, 2011). Case study enables a researcher to provide a far-reaching understanding of a problem being investigated (Punch, 2009 & Hesse-Biber, 2011). It can be argued that case studies aim at “addressing research questions and triangulating thick descriptions with interpretations of descriptions in an ongoing iterative process” (Hesse-Biber,

2011:256). The case study allows researchers to make use of more than one method to collect data (Punch, 2009 & Hesse-Biber, 2011).

Creswell (2007); Punch (2009) and Hesse-Biber (2011) identified three types of case studies which are (1) intrinsic case study which - refers to a single case being studied in detail, (2) instrumental case study- which refers to when a particular case is examined to give insight into an issue and (3) collective case study, also known as multiple or comparative case study – which refers to a number of units or cases studied to learn more about a certain event or issue. Since five universities were selected, the current study is regarded as a collective case study.

### **3.5 Population**

A population is defined “as a total of elements from which a sample is actually selected” (Babbie 2010:199). A population is also further defined as the “entire count of people or objects with characteristics we want to study” (Chikutsa & Chingozha, 2011:36). Ideally, the population of this study consists of all 25 SA universities, but the researcher opted to delimit it to five university libraries in SA. These universities are the University of Cape Town, University of Western Cape, Cape Peninsula University of Technology, Stellenbosch University, and the University of Witwatersrand.

### **3.6 Sampling**

In research, it is a must to identify research participants and sample the selected population into a manageable number. It is practically impossible to study the entire 25 universities in SA as it would be time-consuming, and costly depending on the information related to information literacy and size of their library websites. To avoid a large group of participants, the researcher is required to reduce the population size to a smaller and more manageable number using appropriate sampling methods. The selected number of respondents is determined by the sampling method used which can then be generalised to the entire population in case of a quantitative study such as a survey. While in a qualitative study, the research findings can be

replicated if the same study is conducted in somewhat similar settings. However, in most instances findings or results from qualitative research such as case studies cannot be generalised. The current research being reported in this dissertation used purposive sampling. Purposive or judgmental sampling is a non-probability sampling method in which knowledgeable people or experts are selected as participants of the research study (Neshila, 2011; Palinkas et al., 2015; Etikan & Alkassim, 2016). The researcher purposely selected university libraries and information literacy coordinators from five universities as suitable research participants that would inform the study so that insights for best practice can be harnessed for implementation at the University of Namibia. The researcher is confident that the selected participants possessed particular information that would enable the researcher to understand the problem at hand and provide data that would adequately address the research questions.

### **3.7 Data collection**

There are a number of data collection methods that can be used in a qualitative research. These include: interviews, content/document analysis, audio and visual materials, focus group interviews, and observations (Golafshani, 2003; Blaxter, Hunghe & Tight, 2010; Kumar, 2011; Creswell, 2014). It should be noted that multiple data collection techniques can be used to collect data in both qualitative and quantitative research studies (Creswell, 2007; Punch, 2009; Mertens, 2015). In this regard, the researcher used two methods to gather data; observations through a checklist and interviews.

#### **3.7.1 Content analysis**

Several definitions of content analysis are available. According to Bowen (2009) document analysis is a systematic procedure for reviewing both printed and online based documents. Walia and Kaur (2012:3) “content analysis is a summarizing, quantitative analysis of messages that relies on the scientific method (including attention to objectivity, intersubjectivity, a priori design, reliability, validity, generalizability, replicability, and hypotheses testing) and is not

limited as to the types of variables that may be measured or the context in which the messages are created or presented”.

Zhang and Wildemuth (2016:1) defined qualitative content analysis as “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns”. The above definitions show that content analysis allows researchers to elicit meaning from a document or content in order to provide answers to a research questions.

Content analysis can be used on all types of information sources and there are no specific regulations to be followed when using content analysis. According to Rochester (2016) confirmed that content analysis has been used in library and information research to analyse books, journals articles and serials. Themes and categories are designed based on a phenomenon to be investigated. Rochester (2016) further mentioned that in content analysis research questions must be defined, categories should be set, selection of documents to be analysed and interpretation. Content analysis is a unique research method. It can be used both in quantitative and qualitative research and it can be used in an inductive and deductive way (Bengtsson, 2016:12).

Content analysis has both advantages and disadvantages like many other research methods. Content analysis characterised as an efficient method that requires less time to conduct; less costly; broad coverage; lots of information sources are in the public domain and in most cases requires no permission to conduct (Bowen, 2009). However, a certain document may lack sufficient information, restricted and contains biased selectivity (Bowen, 2009). For the purpose of this study a checklist was used as a data collection method to analysed libraries website contents and is discussed in detail in section 3.7.2.

### **3.7.2 Observation checklist**

The checklist (Appendix A) was developed based on the study research questions as shown in section 1.6 and reviewed literature as it appears in section 2.3. The researcher conducted an analysis of library websites with a special focus on information literacy content, and the curriculum bearing in mind information literacy frames, technological tools used for delivery and

promotion of information literacy education, assessment tools and techniques used and challenges encountered; at identified university libraries using a checklist as a data collection method. Since the libraries' websites are in the public domain, there was no need to obtain the ethical clearance.

A total number of five university websites library were visited and the content were browsed and analysed. The content analysis process commenced on 22<sup>nd</sup> – 26<sup>th</sup> October 2017, since data collection ran concurrently, the interview process started as soon as ethical clearance was granted by the respective institutions. In the process, each library web page was assessed based on checklist themes, to allow the researcher to conduct a detailed analysis to get insight regarding development and delivery of online information literacy content.

### **3.7.3 Interview**

Interview is defined as a qualitative research data collection method in which an interviewer tries to obtain or get information through asking questions from the interviewee about a particular issue (Kumar, 2011; Bertram & Christiansen, 2014; Alshenqeeti, 2014). This can be done through a one-on-one encounter or via, telephone and multimedia formats such as teleconferencing. The interview allows researchers to gather in-depth information as it occurs in its naturalistic settings. The interview can be structured or unstructured; but in this study structured interviews were used whereby the researcher prepared a set of questions comprising of open-ended and/or closed-ended questions. While in an unstructured interview the researcher introduces a topic and let the interviewee respond in whatever sequence they wish (Bertram & Christiansen, 2014). In qualitative research, data that emanates from unstructured interviews is used as “as a descriptor, often in verbatim form and can be integrated with the argument, flow of writing and sequence logic” (Kumar, 2011:145).

However, everything has its own advantages and disadvantages, and this is no exception to the interview as a data collection method. The advantage of using interviews is that data collected is rich and more appropriate because the participants have the autonomy to express themselves freely. In instances where participants are to provide sensitive data, the researcher therefore has

an opportunity to duly prepare the respondents before the interview. This is likely to enable the researcher obtain in-depth information by asking more follow up questions on the problem being investigated. If the researcher is skilled and competent with interviews, s/he can be in a position to probe the interviewer further to unearth more hidden aspects of data. The other advantage is the opportunity for the researcher to clarify questions where necessary which of course can increase data trustworthiness and credibility of the research findings. The researcher can also be in a position to interview any type of participant irrespective of their education background, age, ability or inability (Kumar, 2011: 149; Bertram & Christiansen, 2014) as long as they speak the same language and the interviewee understands the questions being posed.

However, an interview is reported to be labour intensive and expensive. The quality of data, therefore, relies upon the quality of interaction, experience, skills, and commitment of the interviewer. Sometimes interviews have been criticised for researcher's influence or bias that ends up swaying participants towards a certain view point. It generates a lot of data which can be daunting for novice researchers to handle, analyse and interpret.

### **3.7.3.1 Skype interviews**

Skype is a “free communication service that offers an opportunity for calling, video calling, messaging and sharing with people globally” (Janghorban, Roudsari & Taghipour, 2014:1). Although skype is a platform that offers the opportunity for qualitative researchers to gather data through audio and video means irrespective of geographical location, it requires internet access to work (Janghorban, Roudsari & Taghipour, 2014). Sullivan (2012) states that skype interviews work like face to face interviews since they accord both the researcher and respondent the opportunity to exchange questions and answers in real-time. However, the disadvantage is that it requires good and high-speed internet connection but also information literacy skills to make use of it (Janghorban et al, 2014). “There may also be time delays in the conversation which can break the flow of the conversation which is likely to cause disruption in the recording. In audio mode, it is difficult to build rapport and technology itself can fail, resulting in disconnection, postponement of the interview and eventually loss of data” (Sullivan, 2012:59; Deakin & Wakefield, 2014; Lacono, Symonds & Brown, 2016). One-on-one Skype interviews comprising

of open-ended questions were conducted to obtain data from information literacy coordinators. Moreover, interviewees are likely to give inaccurate information and as such data need to be verified by using observation (Kumar, 2011:150; Bertram & Christiansen, 2014:83). Although there are several debates concerning the effectiveness of Skype interviews, there however enormous support for the use of Skype interviews. It is believed that the data yielded via Skype interview will be the same as that data gathered through one-on-one interview (Deakin & Wakefield, 2014). Hence the decision to analyse content on five university library websites and interviewing the librarians via skype was of importance to identify the best practice of online based information literacy programmes.

A total number of five Information Literacy Coordinators from the above-mentioned libraries took part in the study through interviews. The researcher was granted permission by the Human resource departments of institutions and library directors to carry out the study at their libraries and it took 2-3 weeks to obtain permission from the institutions. After the researcher obtained permission, she sent emails to the five identified research participants inviting them to participate in the study. Unfortunately, only four information literacy coordinators showed interest and participated in the study. Thus, a total of four interviews were conducted. However, since the researcher is based in Namibia and participants were in South Africa in different towns, the interviews were held at the researcher's place of resident via Skype. The interviews were conducted sometime between 13 November and 12 December 2017. Those that were conducted on 13 and 17 November 2017 ran smoothly. However, Internet connection was a problem between 29 November and 12 December 2017 respectively and therefore the researcher had to reschedule the interviews. The longest interview lasted for 44 minutes while the shortest interview lasted for 38 minutes. During the interview, the researcher took notes and at the same time used a voice recorder to record the dialogue.

The checklist and interview schedule were used as data collection methods in the following studies:

- Luo (2010) on Web 2.0 integration in information literacy instruction used interview as a data collection technique.

- Su and Kuo (2010) on design and development of web-based information literacy tutorials used content analysis.
- Magnuson (2013) on Web 2.0 and information literacy instruction; aligning technology with ACRL standards indicates that document analysis was used in which course assignments, online discussions and emails were analysed.
- Blummer and Kenton (2015) on utilising Web 2.0 technologies for library web tutorials; an examination of instruction on community college libraries' websites serving large student bodies was centered on content analysis approach.
- Xu, Kang, Song, and Clarke (2015) Application of mobile social media: WeChat among academic libraries in China used to analyse 39 library websites.
- Obradovich, Canuel and Duffy (2015) a survey of online library tutorials: guiding instructional video creation to use in flipped classrooms uses content analysis to analyse websites of 140 libraries.
- Ganaee and Rafiq (2016), Pakistani university library websites: Features, contents, and maintenance issues used a checklist to look at selected library websites.
- Oyewo and Samuel (2016) conducted a study on information literacy, research, scholarship and publications: comparative PhD in Nigerian and South African universities used interviews for data collection.

### **3.8 Data analysis**

Data analysis is a process of transforming raw data into variables that can be analysed to produce the information found in the results (Sapsford & Jupp, 2006). Data analysis means to systematically organise, integrate and examine data; to connect data to concepts; and to identify broad trends or themes (Neuman, 2011). Content analysis was used to transcribe both data collected through websites analysis and interview to find the meanings. Data analysis was guided by the research objectives and checklist content and interview questions. Since the researcher has limited knowledge with available qualitative data analysis software, the researcher hand coded and assigned themes that emerged from the data to establish findings. The discussion of main

findings was done and conclusions, recommendations and future research directions are presented in subsequent chapters.

### **3.9 Validity and reliability**

In qualitative research, validity is the process wherein the research questions, design, methodology followed to collect data, sampling and data analysis techniques are found appropriate. Research findings and interpretation of data are validated when research participants are given opportunity to comment on findings (Shenton, 2004; Noble & Smith, 2015; Leung 2015). In another words, the chosen paradigm, data collection techniques, sampling and data analysis should enable the researcher to answer the research questions to validate the findings (Hesse-Biber & Leavy, 2011; Noble & Smith, 2015). To ensure the credibility of the research findings, the researcher conducted a pilot study to determine the appropriateness of the selected design and instruments. The pilot study was conducted at one university in South Africa to determine the rightness of the selected tools. The study also employed triangulation as a technique to enhance validity of the research findings. Since the study used two qualitative data collection methods, the researcher was confident that the selected techniques will yield comparable findings to validate the research findings.

A number of scholars have indicated reliability has been a challenge to define from a qualitative research perspective as this has originally been applicable to quantitative research studies (Roberts et al., 2006; Creswell, 2014). In quantitative research, reliability refers to when the study that can be repeated over and over and yield the same results. The extent to which results are consistent over time with an accurate representation of the total population is referred to as reliability. Furthermore, if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable Golafshani, (2003; Shenton; Roberts et al., 2006; Creswell, 2014 & Leung, 2015).

However, in qualitative research reliability largely depends on consistency, dependability and credibility of findings. The study will adopt triangulation technique to enhance reliability of the information obtained. This is supported by Zohrabi (2013:259) who mentioned that “gathering

different types of information through different sources can enhance the reliability of the data and the results. In this way the replication of the study can be carried out easily". Similarly, reliability describes consistency within employed analytical procedures and whether the findings are transferable to other settings (Noble & Smith, 2015).

Hesse-Biber and Leavy (2011); Noble and Smith (2015) state that the research paradigm, data collection techniques and methods, sampling method data analysis, and conducting a pilot study enables the researcher to answer the research questions to validate the findings. This study triangulated data sources and feasibility study methods to ensure credibility and trustworthiness of the research findings. The validity and reliability were tested by means of triangulation and feasibility study as presented in section 3.9.1 to 3.9.2 below.

### **3.9.1 Triangulation**

According to Zohrabi (2013:259) and Carter et al. (2014) triangulation is known as a qualitative research approach to test validity and reliability through a convergence of views from different sources. Triangulation is also defined as a technique in which multiple data collection methods in qualitative research are used to obtain in-depth understanding of an issue at hand (Olsen, 2004 & Carter et al., 2014). There are four types of triangulation as identified by Carter et al (2014:545); and these are:

- 1) Method triangulation in which multiple data collection methods are used to study a particular phenomenon.
- 2) Investigator triangulation whereby two or more researchers are involved in the study to provide observations and conclusions.
- 3) Theory triangulation which refers to multiple adoptions of theories to analyse and interpret data.
- 4) Data source triangulation which involves gathering data from different sources of information such as individuals, groups of people, documents or websites to validate the data collected.

The study adopted two types of triangulation namely; method triangulation whereby observation checklist and interview were used as data collection tools; and the data was gathered from university library websites and information literacy coordinators of the selected five university libraries. Both instruments consisted similar subjects invented from the research objectives, research questions and guided by the conceptual framework of the study.

### **3.9.2 Feasibility study**

Nunes (2010:75) emphasised that “Do not take the risk, pilot test first.” The researcher undertook a pilot study to determine the likelihood of the main study and appropriateness of selected research tools. Research findings and interpretation of data are validated when research participants are given an opportunity to comment on the findings (Shenton, 2004; Noble & Smith, 2015; Leung, 2015). Pre-test was also conducted to determine whether the respondents will be able to provide meaningful answers to the questions posed and also to test the usability of the platform in which the interviews were conducted in order to yield valid and reliable results in the end. The pre-test was conducted in October 2017 on the UKZN library website at 21:35 hours while the interview was held on 12 November 2017 at 7:30am. The participant was asked to give views on the selected instruments and the appropriateness of the questions set. The UKZN library was selected to participate in the pilot study due to being at an advanced stage in information literacy programme development. Since there were no issues raised during the pilot study as well as considering the sample of the study, the pre-test study findings are incorporated in chapter four. Betram and Christiansen (2014) mentioned that using a tape recorder during research interviews enhances the accuracy and ultimately credibility of findings. For this reason, the researcher had to use a voice recorder to ensure the accuracy of the views given by the interviewees.

### **3.10 Ethical considerations**

Research ethics is all about ethical issues that arise when human beings are involved as research participants. Research ethics aims at protecting human participants to ensure that research is

conducted in a way that serves the interests of individuals and society as a whole (Walton Nancy, 2013). It is imperative to look at issues such as protection of collected data, voluntary participation, anonymous presentation of responses, and informed consent of the participants (Creswell, 2014; Noble & Smith, 2015; Madhushani, 2016). The researcher therefore applied for clearance from the Library and Information Studies Centre, where she is currently registered for the Master of Library and Information Studies. The ethics clearance committee scrutinised the research instruments to ascertain that they were in line with ethical standards and thus could not harm the participants in any way. Since this study involved both library website of institutions of higher learning and information literacy programme coordinators as research participants, the researcher obtained permission (Appendix C, D, and E) from the respective universities to conduct research on their premises. The research participants were informed of their rights related to non-participation and withdrawal at any time during the research process (Appendix B2). Participants were also informed that data would be presented with anonymity and all participating libraries from the five institutions would be labelled Library A to Library E in no particular order to ensure anonymity. Participants were assured that information gathered would be treated with confidentiality and would only be used for academic purposes. Each participant participated in the study signed a consent form to as an agreement to be interviewed (Appendix B1).

### **3.11 Summary**

To sum up, the research is a qualitative research case study situated within a constructivism paradigm. Judgmental sampling method was used to select the sample. The sample comprised of five selected library websites of universities in SA and five information literacy coordinators from the libraries. The checklist and interview were used as data collection methods. The data was hand-coded, and themes were assigned, discussions and recommendations are presented in subsequent chapters. A pre-test study was conducted to determine the appropriateness of the instruments and no issues were raised. The next chapter presents the research findings.

## **Chapter Four: Analysis and presentation of data**

### **4.1 Introduction**

The chapter presents data and findings that emerged from the study. A description of research participants is given in order to understand the sources of data for this study. The data and findings from the checklist will be presented according to structure that is content, teaching strategies, technologies used and assessment techniques. The results from the interviews are presented in themes drawn from objectives and research questions of the study as outlined in section 1.7 and 1.8 respectively.

### **4.2. Respondents' profiles**

#### **4.2.1. Library websites**

The researcher targeted five universities in South Africa namely: the University of Cape Town, University of Western Cape, Cape Peninsula Technikon University, Witwatersrand University, and Stellenbosch University. Library websites are considered to be convenient platforms for providing virtual services to all users. On the African continent, South African academic libraries are relatively more advanced when delivering library services through their websites to accommodate both full-time and distance students. For this reason, these academic libraries were purposely selected for this research. The library websites of these universities were therefore browsed and analysed. For consistency and guidance, a checklist was developed to serve as an instrument to gather data from these websites. Therefore, the results are presented in a textual format supplemented by graphical presentations of tables. Due to restrictions on some library websites, the researcher was unable to access the web tutorials of some websites. For ethical reasons, data is presented anonymously; hence the libraries are referred to as Library 1 to Library 5.

#### **4.2.2 Information literacy coordinators/Librarians**

A total number of four Information literacy librarians from the university libraries were interviewed to obtain insights to determine the best practices for developing and delivering information instruction using library websites. The researcher resides in Namibia and data was gathered from South African based participants through Skype. Data collection had to be prolonged due to ethical issues the researcher had to obtain consent from the research participants' but also had to seek permission from the selected universities. This had indeed caused delays in data collection and eventually made the researcher to miss deadlines. With the instability of internet connection, the researcher together with the research participants was compelled to reschedule the interview meetings on several occasions. With the instability of Internet connection, the interviews began with videos calls but were completed as voice calls. Technical problems were also encountered which led breaks in the flow of the dialogue, dropping of calls as well as re-scheduling of interviews. Some research participant did not have Skype account or active Skype accounts. As the result, the researcher had to give them time to create Skype accounts as well as to activate their accounts.

#### **4.3. Analysis and interpretations of data collected through checklist**

##### **4.3.1. Content**

Different information literacy content types were identified, the dominant ones being library tours, library catalogue search – print and e-books, formulation of search strategies, evaluation of different sources of information, various databases searching guidance and how to cite and reference. The study ascertained that a majority of the library's websites analysed, provide guidance on how to conduct a literature review, what plagiarism is and the plagiarism software the universities have adopted, research support, intellectual property and copyright; reference management tools such as Endnote, RefWorks, and Medley. The information literacy content further entail what Open Access is, WorldCat tutorials, login problems that students are likely to encounter as well as the information literacy training calendar. The study further divulges that

websites share tutorials provided by database vendors on how to search databases using both basic and advanced search options and at the same time demonstrating how to navigate different databases such as JSTOR and Lexis just to mention a few.

The web-based tutorials in Library 2 are organised into seven modules to help students to acquire information searching skills when working with multiple information sources. Module one looked at layout and organisation of library facilities, collection, services and retrieval tools to find information. Module two looks at numerous types of information sources and formulation of keywords. Module three is about referencing assorted sources of information while module four explains what a database is, types of databases, selecting a database, preparing keywords searching, Boolean operators and truncation searching. Module five addresses the importance of conducting an evaluation of sources of information and the criteria to be used when evaluating these sources. Module six provides tips for reading and Module 7 is about making sense of a text, preview, overview, and in-view. The analysis also discovered that Library 2 has adopted ACRL for Information Literacy Framework for Higher Education adopted in 2016 and the six frames; “Authority is constructed and contextual, Information Creation process, Information has value, Research as inquiry, Scholarship as conversation, searching as strategic explorations which are all embedded into Information literacy tutorials. Library 5 has embraced ACRL standards adopted in 2015.

The study also looked at whether the online based curricula offered at these libraries entails internet use and computer literacy. The study established that none of the libraries offer online tutorials on internet use and computer literacy; as per information on one of the websites. It should be pointed out that a requirement for students with poor computer literacy skills to attain basic computer literacy skills first in order to do information literacy course at Library 2. The information literacy contents offered by the libraries are as shown in table one below.

| <b>Content</b>   | <b>Library 1</b> | <b>Library 2</b> | <b>Library 3</b> | <b>Library 4</b> | <b>Library 5</b> |
|--|------------------|------------------|------------------|------------------|------------------|
| Library orientation  | ✓                | ✓                | ✓                | ✓                | ✓                |
| OPAC search  | ✓                | ✓                | ✓                | ✓                | ✓                |
| Develop search strategies  | ✓                | ✓                | ✓                | ✓                | ✓                |
| Evaluation criteria  | ✓                | ✓                | ✓                | ✓                | ✓                |
| Electronic resources searching e.g. eBooks, journals and databases | ✓                | ✓                | ✓                | ✓                | ✓                |
| Internet use   | X                | X                | ✓                | X                | X                |
| Citation and referencing   | ✓                | ✓                | ✓                | ✓                | ✓                |
| Computer literacy  | X                | X                | X                | X                | X                |
| Literature review  | ✓                | ✓                | ✓                | ✓                | ✓                |
| Research support   | ✓                | ✓                | ✓                | ✓                | ✓                |
| Open access  | X                | ✓                | X                | X                | ✓                |
| Open education sources   | X                | ✓                | X                | X                | X                |
| Reference management tools   | ✓                | ✓                | ✓                | ✓                | ✓                |
| Copyright and plagiarism   | ✓                | ✓                | ✓                | ✓                | ✓                |
| Information literacy training calendar                             | X                | ✓                | X                | X                | ✓                |
| WorldCat tutorials   | X                | ✓                | X                | X                | X                |

|                                  |   |   |   |   |   |
|----------------------------------|---|---|---|---|---|
| Login problems                   | X | ✓ | X | X | X |
| Tutorials from databases vendors | X | ✓ | X | X | X |

**Table 1:** Information literacy contents available in the library websites

✓ Used ; X Not used

The study found that library orientation, that is how to use the library, developing search strategies, evaluation criteria, database searching, citation and referencing, research support, reference management tools, copyright and plagiarism were predominant content offered by the libraries under review. Internet use, computer literacy, WorldCat tutorials, login problems, and databases tutorials from vendors were least online content.

#### 4.3.2 Teaching strategies

It emerged out that most of the academic library websites provide several guides such as faculty based guides, subject guides, government publication guides and undergraduate guides and research guides, databases. The following information was covered in faculty and subject-based guides which contain procedures of How to search books whereby shelf numbers where for instance education books are located in the library, loan rules for staff members and students, the floor where the shelves are to be found, detailed explanation of what journals are and how to access them, thesis, recommended subject databases, as well as links to the databases, are provided. It further contains useful information on how to access library resources off campus, newspaper articles, useful sites, blogs, essay guide, research and referencing guides.

The data shows that the online-based tutorials are made available through Libguides, YouTube, Videos, presentations in PDF and Microsoft Word. Libguides, presentation through videos, PDF and Ask a librarian are the most prevalent mode of delivery, followed by quiz, YouTube, word document and then audio. Live Chat with a librarian and blog are the least teaching methods.

One participant has an education zone where multiple videos are made available for both students and staff members to learn at their own pace. Numerous videos demonstrate how to search for information from varied platforms such as databases, library catalogue, evaluate information, writing, ethical use of information, and how to use RSS feeds and its importance. The study also found that all five library websites have a link called “Ask a Librarian” while some have an option called “Chat with a Librarian”. On Ask a Librarian platform, library users engage with subject librarians regarding the use of library services and challenges encountered in relation to access of information and the use of library services at large. The table below indicates the teaching strategies employed by the libraries.

| Teaching strategies        | Library 1 | Library 2 | Library 3 | Library 4 | Library 5 |
|----------------------------|-----------|-----------|-----------|-----------|-----------|
| Games                      | X         | X         | X         | X         | X         |
| Quizzes                    | X         | ✓         | ✓         | ✓         | X         |
| YouTube                    | ✓         | ✓         | ✓         | ✓         | X         |
| Audio                      | X         | X         | ✓         | X         | ✓         |
| PowerPoint presentations   | ✓         | ✓         | ✓         | ✓         | ✓         |
| Video                      | ✓         | ✓         | ✓         | ✓         | ✓         |
| Libguides                  | ✓         | ✓         | ✓         | ✓         | ✓         |
| PDF                        | ✓         | ✓         | ✓         | ✓         | ✓         |
| MS word doc                | ✓         | ✓         | ✓         | X         | X         |
| Ask-a-Librarian            | ✓         | ✓         | ✓         | ✓         | ✓         |
| Live Chat with a librarian | X         | X         | X         | ✓         | X         |
| Blog                       | X         | X         | X         | X         | ✓         |

**Table 2:** Teaching strategies used by libraries for information literacy delivery

✓ Used ; X Not used

### 4.3.3. Technologies used for online information literacy delivery

The researcher wanted to find out the technologies used to deliver information literacy content. Since Web 2.0 application is a new concept for libraries, there is a low usage of these technologies. The web analysis however revealed that libraries use Libguides, Blogs, Wikis, and social network sites such as Facebook, Twitter, Flickr, and RSS feed to promote and deliver online information literacy program. The analysis also established that Adobe Flash is required to view certain tutorials. Different respondents highlighted various technologies as depicted below:

| Technologies | Library 1 | Library 2 | Library 3 | Library 4 | Library 5 |
|--------------|-----------|-----------|-----------|-----------|-----------|
| Libguides    | ✓         | ✓         | ✓         | ✓         | ✓         |
| Facebook     | ✓         | ✓         | ✓         | ✓         | ✓         |
| Twitter      | ✓         | ✓         | ✓         | ✓         | X         |
| YouTube      | ✓         | ✓         | ✓         | ✓         | X         |
| Blogs        | ✓         | ✓         | ✓         | ✓         | X         |
| RSS feeds    | X         | X         | ✓         | X         | X         |
| Video        | ✓         | ✓         | ✓         | ✓         | X         |
| Flicker      | X         | X         | X         | X         | ✓         |
| Wiki         | X         | ✓         | X         | X         | ✓         |

**Table 3:** Technologies used

✓ Used ; X Not used

The study also aimed to find out whether the respondents are using another platform as outlined in the checklist but it established that none of the respondents were using, LinkedIn, Myspace, Instant messages, and Mashup.

The purpose for which these technologies are used was also studied. The study showed that these technologies are mainly used for library announcements such as changes in the library operation, marketing of library services and resources, Information literacy training calendar, workshops and training, and RSS feeders which are used to provide guidance on how to search library

catalogues and various electronic books and databases at Library 3. It was noted however that Library 4 uses Facebook not only for announcements and promotion of library collections and services but also as a platform to evaluate its library aspects. The website's analysis also revealed that the shortest video can be viewed for about 0.27 minutes while the longest video requires 7:38 minutes.

#### 4.3.4. Assessment tools

As stated in Chapter three under section 2.3.5, there are a number of assessment tools for assessing student learning. It is imperative to know what has been learned, to determine the value of tutorials and challenges encountered by the library users. Understanding the impact of tutorials on students will enable libraries to plan and budget accordingly. It will also enable to determine the impact of the content and challenges encountered in accessing and using tutorials. In this regard, the online tutorials for the academic libraries under review were evaluated and audited to find out if there are virtual systems in place for evaluating students' skills before and after students have gone through online tutorials. Table 4 shows the assessment tools used by the libraries to assess students learning.

| Assessment             | Library 1 | Library 2 | Library 3 | Library 4 | Library 5 |
|------------------------|-----------|-----------|-----------|-----------|-----------|
| Quizzes                | ✓         | ✓         | X         | X         | X         |
| Online multiple choice | X         | ✓         | ✓         | X         | X         |
| Practical exercise     | ✓         | ✓         | X         | X         | X         |
| Pre-test and post-test | X         | ✓         | X         | X         | X         |
| Feedback form          | ✓         | ✓         | ✓         | ✓         | ✓         |

**Table 4:** Assessment tools

✓ Used ; X Not used

The study findings also reveal that not all academic library websites have platforms to evaluate students' previous and newly acquired information literacy skills. It is evident that only Library 2 and Library 5 have active systems in place to check students understanding after online sessions. On Library 2 practical exercises were used to check students understanding of tutorials. Some participants use what is called "Test your knowledge" whereby students can assess their knowledge before and after completion of online tutorials. "Test your knowledge" consist of 23 questions drawn from six online tutorials. There are also quizzes provided at the end of each tutorial. The quizzes consist of multiple choice questions whereby students' are expected to choose the correct answer. The quizzes have a scoring system and at the same time indicate whether the chosen answer is correct or wrong. When the answer is wrong, the system is configured in a way that it gives you a chance to try again before it moves to the next question. The Library 2 website also has quizzes covering the following areas:

*“Getting to know the library”*

*“Searching effectively”*

*“Identifying different information sources”*

*“Finding books”*

*“Finding articles”*

*“Finding and evaluating internet resources”*

*“Plagiarism and referencing”*

Although there are quizzes on almost all library websites, the study ascertained that some of the quizzes have less content and are inactive.

The study also showed that Library 2, Library 3, and Library 4 use evaluation forms not only to test students learning but also to improve the training contents in future. While Library 1 has a feedback form termed *“send us feedback link”*. However, it is not clear if these platforms can also be used to give feedback regarding students learning

#### **4.4. Data analysis and findings from interviews**

This part presents the results from individual's research participants through the interview as stated in section 3.7.2.1. The ultimate purpose of the interviews was to obtain an in-depth understanding of the use of library websites for information literacy delivery in the institutions of higher learning in South Africa. The interview participants were purposely selected due to their extensive involvement in information literacy curriculum development and training as well as the experience they possess for a number of years. Five librarians were supposed to take part in the study. However, the researcher only managed to interview four librarians. The findings of the interview will be presented in line with interview questions (Appendix B3) and the respondents' will be labelled as Respondent 1 – Respondent 4 which stands for respondent one to respondent four respectively.

##### **4.4.1 What are the components of ACRL that are applicable to your information literacy program of your institution?**

This study sought to establish the components of ACRL that are applicable to the information literacy program in institutions. Respondents were asked to indicate dimensions or components of the framework they based their information literacy programmes development at their institutions. The question was aimed at determining whether their information literacy content is following a recognised framework. To narrow the search, evaluate and use information in an ethical manner. The followings are direct quotes from the information literacy coordinators:

*“We follow ACRL standards” (R5)*

*“We are following United Kingdom ACRL standard together with the standard of Australian. So we are following what ACRL is saying” [R1]*

*“We pretty much use the old ACRL framework, officially adopted in 2000.” [R2]*

*“To equip students with basic information searching skills, the content should comprise of how to locate information, how to develop search terms, evaluate, manage and use information in an efficient and effective manner, we are following ACRL standard and frameworks.” [R3]*

**R4** *“We are aware of several frameworks but we do not follow any ACRL framework. No formal information literacy policy or standard at our University libraries.” [R4]*

The study also reveals that information literacy coordinators are aware of ACRL framework and they are using it as a guideline to develop information literacy training sessions. Three respondents (R1, R2 and R3) indicated that their information literacy programmes are based on ACRL framework. One respondent however indicated that the information literacy content at their institution did not follow any framework. ACRL framework is the most known and widely used in academic libraries globally. This is could be the reason a majority of libraries are following or have adopted ACRL framework for their programmes development and delivery. Literatures have also confirmed the use of ACRL framework as a guideline towards development of information literacy programme as alluded to by (Baro, Seimonde & Godfrey, 2013).

#### **4.4.2. What are the key aspects you consider when developing the information literacy curriculum?**

The participants highlighted the important aspects to consider when developing information literacy programmes. The findings revealed that the curriculum should reflect the ACRL standards or framework followed; objectives and the expected learning outcomes should be clearly stated in order to accomplish the intended goals. This was what some participants had to say:

*“We obviously based it on framework or standards that we chose. But for me, it is always about what I want students to know. There must be a table of contents to enable students to choose a specific topic they want to learn. You must have a set of objectives and expected learning outcomes. Have enough budget to cater for all IT related facilities” [R1]*

*“We do not have information literacy curriculum that exists at the university. Information literacy teaching focus on what students need to learn in order to work with different information in 21 century and talk to the vision and mission of the library. There must be a formative assessment and summative assessment to understand student learning, for example, quizzes” [R2]*

*"In the training set up, we look at what students need to know. Particularly with first-year students something like how to search for information from different sources of information, websites where you can pull information, Library orientation, and Physical arrangement of the books, evaluation of information, types of students we have and all in all it depends on what the academics want" [R4]*

*"You consider what you want you users to know and that should be done in line with the library mission" [R5]*

The respondents indicated that it is important to consider what matters most to students. Of course, how to locate information using different sources came out strong. Some coordinators also indicated that it is essential to look at the interest of the users, if the library is to become and remain relevant to the users. Knowing the library services and how to make use of them could result into optimal usage of library services which will eventually enable students to excel academically and become life-long learners.

#### **4.4.3 How do you plan information literacy curriculum that speaks to ACRL frames and deliverable through library websites?**

The respondents were asked to highlight the procedure followed when planning the curriculum that is delivered via library webpages. It emerged out that none of the participants have a formal information literacy curriculum in existence nor have adopted neither ACRL nor SCOUNL framework. However, librarians stressed that when developing web-based contents, it is imperative that it is aligned to ACRL frames when developing and revisiting the programme. It is also essential to align the programme to the vision and mission of the library and have human resources capacitated with relevant skills to create online tutorials. Furthermore, the results have also pointed out that some of the participants had planned to use of the framework while some had expressed a need for information literacy policy for guidance. The following are verbatim responses from the respondents.

*"There is no curriculum or something that we can call a curriculum. We designed online tutorial focuses on 21<sup>st</sup> Century graduate attributes and ACRL frames. To design, you need graphic*

*designer, IT personnel, Librarians, software, IT equipment to make online tutorials possible. The curriculum should have objectives, an introduction, content, assessment [R2]*

*"We do not deliver ours through the library website. But we have developed various clips and audios on eBooks in relation to ACRL standards and piloted for the first time this year and only accessible via learning management system." [R1]*

*"Not in terms of ACRL or anything else but there are self-help tools, we have got videos, quizzes, Libguides which are on websites under research guide but they are not attached to ACRL or SCONUL framework." [R4]*

*"Stakeholders and infrastructures needed for a successful development and curriculum" [R5]*

Although the respondents indicated that none of them have a formal information literacy curriculum, the participants pointed out the need to align information literacy programmes to the ACRL framework as well as developing a localised information literacy policy.

#### **4.4.4 How do you reach out to students with different learning styles through online delivery? Which teaching strategies do you use?**

The respondents were asked to talk about the teaching methods employ to reach out to students with various learning styles. The results revealed that the university libraries use online tutorials in the form of video clips, audios and presentations which are accessible through both learning management systems and library websites. Libguides and self-learning platform accessible via library websites were developed. Respondent 1 indicated that it is vital to create information literacy content for students in multiple formats to select the preferable format in which they want to learn. The respondent recommended that the content should be able to be read offline. This might be more beneficial to students who do not have internet connection in their homes to download the content into their personal devices. It will further provide opportunity to the library users to have access to the content during downtime. Libraries opted to use learning management tools as mode of delivering information literacy content may be because students are mainly using such platforms to engage with their lecturers, to obtain notes, for academic announcements and for assignment submission on daily basis.

The participants' responses are as follows:

*"We have developed online tutorials and also videos that students can follow" At the same time we developed so far 150 subjects or faculty based Libguides" "We use blended learning" [R3]*

*"At the moment, we do not offer Information literacy training course through blended learning but we have developed online tutorials known as Libguides accessible via the library website" I want to develop more tutorials on different platforms such as audios, videos, and presentations were students should decide the format in which they want to learn. These formats should be offline readable." [R1]*

*"We have videos and libguides on the website" [R5]*

*"We use online learning management system called "Blackboard" the university has adopted" We also have self-learning platform where students can view videos and different modules of information literacy" [R2]*

*"With online delivery, it is only those self-learning tools I have just previously listed (section 4.3.1.3) but we are also moving in the area of gaming soon." [R4]*

#### **4.4.5 Which assessment tools do you use for web-based information literacy teaching and learning? How reliable are these tools?**

The research participants were requested to indicate the assessment tools they use for online training assessment and how reliable they are. It was noted that each university has its own unique way to conduct assessment and it is being done in multiple techniques. However, the respondents stressed that despite a number of assessment tools in place; such assessments are not formal but rather self-assessment tools. Therefore, students conduct self-test after they have gone through certain tutorials to determine the level of their understanding. The participants indicated that there are a number of ways to assess students learning as shown by the following excerpts:

*"We use multiple choice assessments via blackboard. The assessment consists of 100 questions. We do regular items analysis with data to see how students have answered to make sure that the tests are valid, reliable and questions are really good questions" They need to practice what they*

*learn and thus the subject-specific assignment comes in. In future, we are planning to develop online quizzes and practical exercises for self-assessment." [R1]*

*"We do not have a formal online assessment that we librarians are in control of but there are online self-assessment quizzes and exercises at the end of each tutorial. I use blog where I post the homework and assess them via that but no grading is being allocated to students. I use Wikis and "Today's Meet Online Platform for assessment. I collaborate with academics using google doc where lecturers upload assignments to google doc and then I incorporated some of the information literacy concepts in the assignments to assess literacy skills. They are reliable but the problem comes in when the network is down" [R2]*

*"We have a quiz accessed through learning management. We also use Evaluation feedback form which focus on student learning to see whether the teaching and intended learning outcomes are met. It is very important to have a formative assessment as it promotes dialogue between the library and students". [R3]*

*"There are quizzes on the website as a self-assessment tool". [R4] and [R5]*

A follow up question was asked to find out how will they know that students are using these tools to assess their literacy skills. Two respondents indicated that they *"generate statistics from the website that shows the frequency visits and the last day the content or tool was used" [R1] and [R2].*

#### **4.4.6 Which other applications and technologies do you use when preparing web-based information literacy tutorials?**

The study reveals that the research participants use a variety of applications and technologies when developing online tutorials. The technologies used for online delivery are YouTube, screencast, cartoons, frequency Ask Questions, Ask a Librarian, Camtasia software and Articulate software for creating videos and gaming content. They also use Facebook, Twitter, Blogs, and Wikis for communication and announcement regarding library service events. Here are the participants' responses.

*"We do screencast, YouTube channel and cartoons" You also need to subscribe or buy software that will enable recording possible. We look up for Open Education Sources with nice clips on Information Literacy concepts. If I find one, we create a common license which gives right to use it and add our own branding to it as well as recording it in a local accent and acknowledge the owner." We also have library Facebook and Twitter accounts for communication and library announcements." [R1]*

*"You need software that will make a recording of videos" You need speakers, recording devices, and a computer. You need to have Facebook and Twitter accounts for communication" [R2]*

*"We use Camtasia software for video recording, Microsoft PowerPoint for PowerPoint presentations and YouTube to create videos. We also created Facebook, blog, and Twitter to engage with students" [R3]*

*"We use Camtasia and Articulate software. Furthermore, we have Facebook, Twitter, and Instagram accounts but our focus is more on Facebook and Twitter for marketing and advertisement. We also use Google features and Microsoft packages such as media player for video making. We also have Adobe Connect a webinar which we can use for online teaching." [R4]*

#### **4.4.7 What are the advantages and disadvantages of these applications and technologies?**

The research participants' highlighted pros and cons of the applications and technologies needed for creating and delivering online tutorials. The findings reveal that technologies made it easy to access information from comfort zone at any time. Multiple users can use or access similar content at the same without disruptions. It is reported to be easy to update the content and easy to use. However, it is reported to be time-consuming and highly depend on internet connection. When the network is down, there is no access to literacy content. The responses below reflect the sentiments of respondents on pros and cons of various applications and technological tools adopted by libraries for online delivery.

#### **4.4.7.1 Advantages**

*"You can use online tutorials during face-to-face sessions e.g. plays a clip on how to search a book. With technology everything is possible, you can record an audio or video, screencast. You can access the content anywhere, anytime as long as you have the internet connection. It allows reaching out many students as quickly as possible." [R1]*

*"Students can access online tutorials at their own pace or time in need. You can edit the content easily. Many students have Facebook and Twitter accounts, so it is easier to market and make an announcement on these platforms." [R3] and [R5]*

*"Camtasia is quite easy to use" [R4]*

#### **4.4.7.2 Disadvantages**

*"It is labour intensive. You need to conduct research about better software, equipment and facilities you require. You cannot just use any. They are also expensive and time consuming." [R1] and [R5]*

*"Because of diversified community of students, not all of them have access to technologies and social platform. And if they have access, there are always internet connectivity problems. With blog for instance, during my class for information literacy, they have a weekly blog which must be posted to the blog they created but sometimes the blog cannot open and it depends on the platform they used when they created the blog." [R2]*

*"You only uses or refer students to the online tutorials when there are internet connections but when the system is down, it is difficult. You need money to buy Camtasia license for example and sometimes there are not enough funds." [R3]*

*"There are **only** two PC with Camtasia license. The quiz making and gaming software are each sitting on one computer so it's not readily available to play around with them so you have to find someone to use it." [R4]*

#### **4.4.8 What challenges do you often encounter when planning information literacy curriculum, delivery and assessment through the website?**

Participants were asked to share problems experienced during information literacy, delivery, and assessment through a website. It is noted that there is a challenge in identifying possible technologies to use for online tutorials development, financial challenges, slow internet connectivity, power failure, downtime, dependence on IT experts and individuals with nice voice. The study further noted that students take time to complete online assessments.

Below reflects participants' experiences in planning, delivery, and assessment of tutorials via library websites

*"The challenge is you do not know the technologies to use. Lack of funds." Slow internet speed. The disadvantaged students have only access to the internet when they are on campus." [R1] and [R5]*

*"There are always technical glitches. Sometimes the website is unavailable due to upgrade and maintenance of the internet. You need licenses to use certain software and these are costly. You always have to rely on someone such as IT personnel for software and related technologies." [R2]*

*"Each computer needs its own license of which the university cannot afford. You need a quiet environment, lack of human resources with curriculum development skills and with a nice voice for recording purposes. Students take time to complete assessment tasks such as the evaluation feedback form. Limited accessibility because we are many and there are only two licenses." [R4]*

#### **4.4.9 Do you have any suggestions on how to overcome these challenges?**

Lastly, the information literacy coordinators were asked to provide suggestions on how to mitigate the challenges encountered during information literacy content planning, creation, delivery and assessment. The question was aimed at capturing different views on how to plan, and deliver online based literacy content successfully. Information literacy coordinators made the following proposals:

*“We need an information literacy policy at the university that says information literacy programme is actually incorporated. Additionally, we need to take a leave out of CPUT book. They have really got it right. We should continue exploring what other libraries are using for online information literacy delivery and assessments.” [R4]*

*"We should also think of how to incorporate WhatsApp into information literacy teaching. Technologies changes now and then, so as librarians we need to keep abreast with emerging technologies suitable for current digital generations. It is time for us as librarians to find a way of creating downloadable video and contents downloaded and played or read offline. The similar platform may be designed in such a way that they can be shared using WhatsApp application. So that in an event where there is poor internet connectivity students' learning is not compromised. You need a good budget and we should budget well in advance" [R1].*

*"With regard to internet connection problems, this is something out of our hands, it is something you cannot predict and expect to happen anytime. I recommend that IT should do continuous upgrade to prevent it from happening more often and at the same times urged librarians to develop a good relationship with IT departments" [R2].*

*To liaise more and convince with academics' to know the importance of information literacy to students and encourage them to make use of online tutorials as well as to attend face-to-face training in order for students to excel in their academic activities [R3].*

*“I suggest for capacity building workshops among libraries to learn from one another” [R5]*

#### **4.5 Summary**

This chapter has presented the findings of data collected. The findings are based on both checklist themes and interview questions which comprise of content and the framework adopted and key aspects to be considered when planning and developing information literacy curriculum. The findings from the study indicate that all respondents offer similar information literacy content including library tour, finding information, develop a search strategies, databases searching , literature review and evaluation of information just to mention but a few. On teaching approaches, both web analysis and interviews confirmed the use of Libguides, blog, Facebook,

Twitter, YouTube, Flickr, Videos, and Wiki. The study further revealed that Libguides, Facebook, YouTube, Videos and blogs are the most technologies used for online based tutorials. The results also presented technological and assessment tools used their advantages and disadvantages that could inhibit online based content development and delivery to take place. These disadvantages among others include labour intensive, time consuming, inability to identify suitable and relevant facilities to use, power failure, and lack of human resources with relevant skills.

The study has further revealed the challenges encountered during information literacy curriculum development and how the challenges can be mitigated. The study however, concludes that more networking and management support is required among libraries to explore and learn from one another. The next chapter discusses the findings in relation to study's objectives and research questions, paradigm informing the study.

**Table 5: The table above presents a summary of responses from information literacy coordinators.**

| Interview question                          | Respondent 1   | Respondent 2  | Respondent 3   | Respondent 4  | Respondent 5   |
|---|--|---|--|---|--|
| 1. ACRL components                          | <ul style="list-style-type: none"> <li>Following ACRL standards and information literacy Policy</li> </ul>   | <ul style="list-style-type: none"> <li>Use ACRL framework</li> </ul>  | <ul style="list-style-type: none"> <li>Following ACRL standards and framework</li> </ul> | <ul style="list-style-type: none"> <li>Do not follow any ACRL framework and no information literacy at our libraries</li> </ul>                       | <ul style="list-style-type: none"> <li>Following ACRL framework</li> </ul>         |
| 2. Key aspects                              | <ul style="list-style-type: none"> <li>The framework or standards following, Vision and mission of the library, table of contents, Body, objectives and learning outcomes, assessment</li> </ul> | <ul style="list-style-type: none"> <li>Usage of information in different formats. Formative and summative assessment</li> </ul> | -  | <ul style="list-style-type: none"> <li>Finding information, library tour, evaluation of information</li> </ul>  | <ul style="list-style-type: none"> <li>Library mission</li> <li>Content</li> </ul> |
| 3. Information literacy curriculum planning | <ul style="list-style-type: none"> <li>Content format e.g. clips and audios in relation to ACRL standards</li> <li>Software</li> </ul>   | <ul style="list-style-type: none"> <li>ACRL standards. IT personnel, software and ICT infrastructure</li> </ul>                 | -  | <ul style="list-style-type: none"> <li>Developed videos, quizzes and Libguides accessible via websites and not attached to any information</li> </ul> | <ul style="list-style-type: none"> <li>Stakeholders</li> <li>Software</li> </ul>   |

|                                  |  |  |  |   |   |
|----------------------------------|--|--|--|---|---|
|                                  |  |  |  | literacy framework  |   |
| 4. Mode of delivery              | <ul style="list-style-type: none"> <li>The content should be developed in multiple formats e.g. video and audio clips</li> </ul>   | <ul style="list-style-type: none"> <li>Use blackboard, videos , MS word via library website</li> </ul>   | <ul style="list-style-type: none"> <li>Online tutorials, videos and Libguides</li> </ul>   | <ul style="list-style-type: none"> <li>Through self-learning tools that include videos, Libguides, and quizzes.</li> </ul>                            | <ul style="list-style-type: none"> <li>Videos via website</li> <li>Libguides</li> </ul> |
| 5. Assessment tools              | <ul style="list-style-type: none"> <li>Use multiple choice and subject-based assessment. Plans are underway to develop online based quizzes practical exercises for self-assessment</li> </ul> | <ul style="list-style-type: none"> <li>Self-assessment quizzes, exercises on the website. We also use Blog, Wikis and Google doc for assessment</li> </ul> | <ul style="list-style-type: none"> <li>Evaluation feedback form.</li> </ul>  | <ul style="list-style-type: none"> <li>Quizzes on the website</li> </ul>  | <ul style="list-style-type: none"> <li>Quiz and evaluation form</li> </ul>              |
| 6. Applications and technologies | <ul style="list-style-type: none"> <li>Screencast software, YouTube channel, Facebook and Twitter</li> </ul>   | <ul style="list-style-type: none"> <li>Software for recording and ICT infrastructure</li> </ul>  | <ul style="list-style-type: none"> <li>Camtasia software, Microsoft PowerPoint, YouTube, Libguides, Facebook, blog, and Twitter</li> </ul> | <ul style="list-style-type: none"> <li>Camtasia and Articulate software, media player, Adobe connect, Facebook, Twitter, Instagram, Google</li> </ul> | <ul style="list-style-type: none"> <li>Camtasia</li> </ul>                              |

|   |   |  |   |   |   |
|---|---|--|---|---|---|
|   |   |  |   | features and Microsoft packages   |   |
| 7. Advantages and disadvantages of applications and technologies                          | <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Use online tutorials in the traditional class</li> <li>• Access the content anywhere, anytime</li> <li>• Provide multiple accessibility</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• It is time consuming</li> <li>• Costly</li> </ul> | <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• There are always internet connectivity and technical issues</li> </ul>                                  | <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Access the content at own pace.</li> <li>• Edit the content easily</li> </ul> <p>Easy to share the content via social network sites.</p> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• It requires internet access to online content.</li> <li>• It require funds to acquire software</li> </ul> | <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Quite easy to use</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• It requires skills and training to make use of it effectively.</li> </ul> | <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Easy to access where you are</li> <li>• Easy to edit</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• Takes time to record</li> <li>• Expensive</li> </ul> |
| 8. Challenges during information literacy curriculum development, delivery and assessment | <ul style="list-style-type: none"> <li>• Do not know the technologies to use.</li> <li>• Lack of funds</li> <li>• Slow internet speed</li> <li>• Depriving disadvantaged students who only</li> </ul>   | <ul style="list-style-type: none"> <li>• Unavailability of the website due to upgrade and maintenance of the internet.</li> <li>• Licenses to make use of certain</li> </ul> | -   | <ul style="list-style-type: none"> <li>• It require licenses</li> <li>• Quite environment and an individual with a good voice for recording which is difficult to find</li> </ul>   | <ul style="list-style-type: none"> <li>• No skills for developing a curriculum</li> <li>• Lack of facilities for curriculum development</li> </ul>  |

|                |   |  |  |  |  |
|----------------|---|--|--|--|--|
|                | <p>have access to the content when on campus</p> <ul style="list-style-type: none"> <li>• Students take time to complete the assessments</li> </ul>                       | <p>software</p> <ul style="list-style-type: none"> <li>• Relying on IT personnel for good software and technological tools</li> </ul>  |  | <ul style="list-style-type: none"> <li>• Students take time to complete assessments</li> </ul>   |  |
| 9. Suggestions | <ul style="list-style-type: none"> <li>• Incorporate WhatsApp</li> <li>• Create a downloadable content and readable offline.</li> <li>• Allocate enough budget</li> </ul> | <ul style="list-style-type: none"> <li>• Continuous upgrade and develop a good relationship with IT personnel to help with making the content readily available on the website and update it accordingly.</li> </ul> | <ul style="list-style-type: none"> <li>• Develop a good relationship with academics to assist with information literacy curriculum development.</li> </ul> | <ul style="list-style-type: none"> <li>• A need for information literacy policy to work as a guideline when developing the curriculum.</li> <li>• Exploring what other libraries are doing.</li> </ul> | <ul style="list-style-type: none"> <li>• Collaborate with other libraries globally to learn from them</li> <li>• Workshops and training</li> </ul> |

## **5. Chapter Five: Discussion of main Findings, Conclusions, and Recommendations**

### **5.1 Introduction**

The previous chapter looked at analysis and interpretation of data gathered by looking at themes emanating from the research objectives and research questions of the study. This chapter discusses, summarizes and interprets the findings of the study. The discussion of the main findings will be based on the research questions as alluded in section 1.8, the paradigm/theory that informed the study as indicated in section 2.2 and reviewed literature as indicated in section 2.3 of chapter two. Conclusions and recommendations are made based on the discussion thereafter.

### **5.2 Discussion of findings**

#### **5.2.1 Which content is key for information literacy in order to comply with ACRL frames?**

Based on the study findings, it appears that online information literacy program contents comprise of library tour, search the library catalogue, formulation of search strategies, and evaluation of information, citation and referencing. The studies conducted by De Jager, Nassimbeni and Underwood (2007); Li, Leung, and Tam (2007); Jiyane and Onyancha (2010); Chen and Chengalur-Smith (2015) shared similar findings on information literacy content taught in academic libraries that include virtual library tour, Online Public Access Catalogue (OPAC), electronic resources searching, developing search strategies, ethical use of information, and citations and referencing. Baro and Keboh (2012); Sheret and Steel (2013); Mole et al. (2013) in relation to the above findings, conclude that academic libraries offer information literacy training which consists of Library tours, introductory or advanced information skills, research skills, developing search strategy, evaluation criteria, and assignment based information searching skills, use of appropriate referencing styles. Another study that revealed similar findings is a study by Obradovich, Canuel and Duffy (2015) on analysis of instructional video content, but also discovery tool searching, databases searching, search preparation search strategies and using reference management tools.

Furthermore, the study also found that academic libraries offer research support training under which literature review, plagiarism; several reference management tools, Boolean operators and truncation tools are covered. Similar findings appeared in the studies conducted by Secker and Gibson (2010); Obradovich, Canuel and Duffy (2015) whose established that students are trained on how to conduct a literature review and use of citation and reference management tools.

The study also reveals that none of the libraries offer basic computer literacy and internet use to its students'. The researcher assumed that librarians expect students to be in possession of such skills from a secondary level which might not be the case due to the diverse community.

### **5.2.2 How do academic libraries plan information literacy curriculum that speaks to ACRL frames and delivered through library websites?**

ACRL frameworks acclaimed as key frames to be considered when developing information literacy curriculum thus include, find, locate, evaluate and use of information. It supports information literacy curriculum embedded into academic programmes and formulation of curriculum objectives, learning outcomes as assessment tools to measure students' information literacy skills (Buddy, 2004). Although none of the university libraries have adopted a South African framework for information Literacy for higher education, the results established that the university libraries under study have rather incorporated ACRL framework of either UK or Australia or both into their information literacy teaching and learning. This could be the reason that the said libraries have recognised the ACRL framework because it is most widely used in many libraries. The programmes are reported following a well-structured approach designed and adopted by ACRL to guide librarians to develop information literacy content. In a study by Li, Leung and Tam (2007); Mole (2013) findings emphasise that in order to ensure that students' are able to recognise their information needs, finding, evaluating and using the needed information appropriately, Information Literacy Competency Standards for Higher education as outlined by ACRL should be followed.

It emerged that it is essential for information literacy programme to clearly outline the objectives, learning outcomes through practical exercises, and quizzes as the framework recommended. In order to achieve this, human resources thus; graphic designer, IT personnel,

and librarians appropriate software for online based creation content and IT infrastructures' are required to make it possible.

### **5.2.3 Which information literacy content delivery strategies are commonly used in web-based learning environments?**

On teaching methodologies, the study found that face-to-face information literacy trainings are still dominating. The blended learning could be probably not fully implemented due to lack of ICT infrastructures, funds and human capital. The study however, discovered that libraries have employed multiple learning methods embedded onto their websites to infuse information literacy skills into their users. Both library websites analysis and interviews revealed that contents are made available through Libguides which are sub-divided into faculty based, subject or departmental, government publications, undergraduate and research-based guides mainly for postgraduate students. The results also showed many other modes of delivery that are being used by the libraries such as blogs, instructional videos, and audios accessible via YouTube channel. The findings indicated that both videos and audios are equally made available through learning management systems such as Moodle, blackboard and library websites. The study reported that quizzes are also being used as both teaching and assessment tools. Libguides are the most dominant mode of delivery, followed by video and audio recordings made available through YouTube channel.

The programmes have also adopted different modes of delivery and few libraries had embedded information literacy training into academic programmes while some are yet to incorporate it into the academic curriculum.

It also came out that one university is in the process of developing instructional content into game format as another way to instil information searching skills in students. This might help to accommodate students with learning preferences as well as millennial students. These findings are in agreement with the findings reflected in the study conducted by Li, Leung and Tam (2007); Secker and Gibson (2010) who stated that online-based tutorials should include learning activities such as games, quizzes, Libguides, videos, presentations and audios which can be made accessible via library websites, for example YouTube channel and learning management tools such as Moodle and Blackboard. In another study by Rush and Stott (2014) considered the

digital environment we live in, it was suggested that the library instruction sessions should be made available in various format such as videos in order to reach the digital generation.

#### **5.2.4 What are the technologies often used in web-based information literacy delivery; and how are these technologies used for effective delivery?**

Due to constant emerging technologies, it came out strongly that various technologies are used for information literacy delivery and promotion. Most academic libraries noticeably display Libguides, blogs, wikis, Facebook, Twitter, YouTube, and RSS Feeds links as emanated from both web pages analysis and individual interviews. These findings are in conformity with what Luo (2010) Blogs, Wiki, and Social Bookmarking sites, YouTube, Screencast software are used to organise and deliver content for information literacy. A blog is an educational tool that enables teaching, collaboration, and discussions to take place inside or outside classrooms (Azizinezhad & Hashemi, 2011; Sidek & Yunus, 2012) The study further revealed that students are eager to see the blog being used more often in teaching. While Mestre (2013) stated that tutorials are regarded as a pedagogical method that can be in a form of videos, games, quizzes that can be incorporated into websites.

Similarly, Bowles-Terry, Hensley and Hinchliffe (2010); Mestre (2012); Blummer and Kenton (2015) found podcasts, blogs, social networking platforms, wikis, Libguides, Springshare cloud computing content management system, LMS i.e. Moodle and Blackboard, and YouTube sharing are recognised as useful tools to use for online education. In a study by Secker, Macrae-Gibson (2011) on the evaluation of information literacy course for PhD. students' similar findings were shared that Moodle is being used to complement face to face teaching across the institution. The study stressed that Moodle was integrated into the classroom with interactive tasks and quick access links to numerous databases being used. Otto (2014:81) outlined a variety of tools applicable to any kind of teaching, helpful in developing a course content and at the same time ensuring collaboration between faculty and librarians as “LMS, videos, RSS feeds readers and creators, podcaster creators’, screen capture tools, blogs, collaborative document creation tools, web conferencing systems, online-based simulation and assessment tools.”

The study also found that librarians used Camtasia, articulate gaming software for videos recordings and quiz making. Luo (2010) reported that libraries use Screencast software,

Camtasia, cartoons, to create information literacy contents and assessment tasks. While Frequency Asked Questions, Live Chat with Librarian and Ask-a-Librarian platforms are used to educate student through asking questions.

From the findings, the respondents shared the benefits of application and technologies mentioned above when developing and delivering information literacy programmes. The following were indicated as the characteristics of good technologies; easy to use; and update; accessible anywhere, anytime; accessible by multiple students at the same time; can use used to supplement face-to-face classes, hosting multiple locations especially with Adobe connect which enable recording and distribution of recordings to students, it allows collaboration between the library, academics, and students. These findings are in line with Mole et al (2013:182) who stated that online-based teaching is regarded globally as an effective teaching method as "it can be easily updated, transformed, upgraded and can also be shared".

The study conducted by Jackson (2007) showed that technologies enable libraries to create links to library resource, create web-based tutorials to use through LMS, and allow the library to integrate information programs into the academic programme. However, librarians have expressed that there is limited knowledge to optimally use learning management system tools adopted by universities without any proper training. In many institution of higher learning, learning management tools are introduced to create smooth communication between academics, students and their academic departments. However, the libraries are forgotten and do not form part of this noble initiative to reach the students to educate them or share notes about information literacy. For this reason, librarians are compelled to engage with lectures to share their communication through such platforms which left them with minimal knowledge.

The results of this study also revealed several shortcomings in relation to technological tools required for online tutorial development and delivery One of the major challenges is that it is labour intensive and expensive and due to diverse communities from different backgrounds where some individuals only have access to the Internet on campus, it has proven difficult for libraries to completely become digital. Therefore, face-to-face training remains relevant to cater for students from the underprivileged backgrounds. The librarians also confessed that it is not easy to identify appropriate applications to use without IT personnel's assistance. As a result, librarians are highly depending on IT to help them with the identification of suitable tools and

provide training for effective use thereafter. These results are in agreement with studies carried by Mestre (2011 & 2012:261) who stressed that “librarians are generally not aware of best practices or how to design pedagogically sound objects”

Additionally, although librarians are placed at the centre of connections with all faculty centers as alluded to by Otto (2014), the librarians indicated that there is a poor collaboration with academics which sometimes makes it difficult to incorporate information literacy concepts in academic activities. Jackson (2007) Baro, Seimonde and Godley (2013) proved that in order to develop and deliver information literacy content effectively and efficiently, it requires faculty to buy in to incorporate information literacy concepts within a course. The study also revealed that online delivery lack participation. The above findings echoed what Tang and Tseng (2013) stated that web-based teaching and learning platforms lack students' participation since it's not mandatory to attend. Lack of student' participation could be probably necessitated by students who prefer to learn on their own using online tutorials, therefore; it is recommended that it is vital to solicit inputs from academics for topics of interest and the best time for training to attract many students as possible. A successful webinar includes “objectives, lecture, active learning and interactive learning activities obtained from potential participants (Tang & Tseng, 2013).

### **5.2.5 Which assessment tools and techniques are used for information literacy via websites and how are these tools and techniques used?**

The results from both web pages analysis and interviews conducted showed that libraries have adopted many ways to examine students learning. Although it came out that not all assessment was for grading purposes, the librarians felt that it is important to have self-assessment tasks for students to test their own understanding before and after online sessions. This will help students to consult further to master the concepts in details. The study also found that libraries use multiple choice methods via Blackboard, Moodle and websites which often consist of quizzes in which students' are required to select the correct answer. The regular check-ups are also conducted to test the validity, and reliability of questions set. The study also found that libraries developed online quizzes and practical exercises as self-assessing tools. The same view is shared in the studies done by Li, Leung, and Tam (2007); Baro and Keboh (2012); Lockhart

(2015); Obradovich, Canuel, and Duffy (2015) revealed that the academic libraries use multiple choice items and quizzes to test students learning outcomes.

Subject-based assessment is believed to be an effective way to assess students' information literacy skills and encourage students to participate in information literacy training as they are afraid of losing marks. Hence, students are being assessed through subject based assignment were information literacy concepts such as citation and referencing are incorporated. A similar sentiment is shared by Jiyane and Onyancha (2010) on an assessment that students are also assessed on information literacy topics taught through assignments. Furthermore, Sobel & Sugimoto (2012) showed that module based assessment and quizzes are the most preferred and effective assessment tools for learning outcomes.

Moreover, the data further shows that libraries use evaluation feedback forms to determine whether the teaching and intended learning outcomes are met. The evaluation forms are reported to be a good assessment tool because they are configured in such way that it goes to a specific librarian assigned. It enables librarians' to notice where there is a need for improvement and creates a strong bond between students and the librarians. In the same vein, it promotes the relevance of the library and creates a dialogue between the library and the students. Secker, Macrae-Gibson (2011) study supports the findings that evaluation forms are distributed among PhD. students to obtain feedback to indicate the relevance and effectiveness of the program.

In a study by Liu, Leung and Tam (2007) it was discovered that different activities are used for assessment which is in the form of questions and answers. The study also supports other activities that will allow students to conduct a practical search in the library catalogue, and to take part in multiple-choice quizzes to test the concepts learned.

The findings of the study correlates with what Jackson (2007) found that the LMS usage is growing in academic setting trend and many libraries are using them for online information literacy teaching. The majority of the respondents indicated that WebCaT, Blackboard, and Sakai were used to and assess information literacy in students. The librarians further emphasised the importance of conducting formative and summative assessment. Formative assessment is about knowing whether students have grasped concepts they were taught, while summative assessment looks at the general set up of the program for future improvement. The same study indicates that librarians use LMS for discussion through which students asked questions

regarding searching of library catalogue, searching of databases and many others. Similar findings were also found by Williams (2013) on measuring students learning in information literacy instruction where it was found that libraries can use evaluation feedback forms which can be either on paper or online to determine the usefulness of the programme.

### **5.2.6 What are the challenges often encountered in web-based information literacy delivery and how are these challenges addressed?**

The findings of this study indicate- that there are several obstacles that may hinder curriculum planning, delivery, and assessment. The following are the hindrances that librarians encounter: difficulties to identify appropriate applications and technologies required for developing online based information literacy content, financial challenges, poor internet bandwidth, power outage, dependability on IT personnel and individuals with a clear and good voice to speak on audio/video recording. The findings also revealed that there is limited access to technology acquired, and librarians take time to master the use of applications. The study further established that libraries are unlikely to move completely digital due to students from disadvantaged communities. In the same vein, students are reportedly taking time to complete an online assessment which could be probably caused by lack of accessibility due to unavailability of internet connection in their homes as well as lack of portable devices. As a result, face-to-face information literacy training is still existing and dominating as an appropriate teaching approach to accommodate students who only have access to the internet connection while on campus.

### **5.2.7 Suggestions emanated from the study**

The results of this study highlighted abundant suggestions to overcome challenges in relation to information literacy development, teaching strategies, delivery and assessment tools:

- To continue exploring what other libraries are doing
- To develop a good and strong relationship with academics because they would know the students' interests regarding library skills.
- To keep abreast with emerging technologies suitable for current digital natives

- To create online tutorials with similar content in multiple formats to accommodate students with different learning styles.
- To develop both audios and video recordings readable offline
- To continue assessing students library skills to remain informed about future plans
- Increase and strengthen internet bandwidth and conduct regular upgrading application. Mestre (2013) said students recommended for librarians to embed numerous multimedia in online tutorials design so that they can choose the preferred format in which they wish to learn.

### **5.3 Conformity to Constructivism and ACRL framework.**

Since the study adopted constructivism and ACRL framework Information Literacy Competency for Higher Education, the study found that libraries have adopted both constructivism and ACRL framework in their information literacy program. The study found that information literacy content is made available in different formats such as videos, audios, and textual data in the form of Libguides. This has made it possible for students with learning preferences to select the learning platform suitable for them. Moreover, the learning platforms have put students at the centre of learning because the study revealed that students access and learn at their own pace and ask for further clarification through live chat, various learning management software and Ask-a-Librarian platforms. It is also testified that libraries have self-assessment tools such as quizzes and practical exercises at the end of each tutorial which implies that students are placed at the centre of learning and are responsible for their own learning.

Furthermore, it also emerged that although there are no information literacy curriculums existing at five universities under study. It strongly came out that all the libraries investigated, have aligned their information literacy content to UK, Australia or New Zealand ARCL framework which included: to determine when there is information need, finding, develop searching strategies, evaluate, manage and use of information in an ethical manner.

## 5.4 Conclusion and recommendations

In relation to the discussion of the main findings, the researcher has made the following conclusions and recommendations:

- South African university libraries have preserved emerging applications and technologies for online information literacy teaching and learning in order to promote library services and collections to all their users via library web pages.
- Although face-to-face information literacy training still dominates inculcating information literacy skills, these libraries have done a commendable work by developing self-learning tools in various formats that correlate with the current digital environment. This is indeed a clear indication of how libraries ought to function to remain relevant to their digital users. Thus, it is a good opportunity for the University of Namibia to explore more and collaborate with South African universities to emulate what they have done.
- The study indicated that the university libraries have a clear understanding of information literacy programmes, their importance and of the ACRL framework in order to develop and deliver suitable and relevant programmes. The researcher is therefore suggesting that for African universities should collaborate and develop a framework that suits their local needs.
- The study found that there is a poor collaboration between librarians and academics, which may be necessitated by none existing information literacy curriculum which makes the academics not take information literacy education as key aspects that students require in order to excel academically. Furthermore, the poor cooperation may be a result of poor marketing strategies adopted by the libraries. Therefore, it is recommended that libraries revisit the strategies used to educate their academics to ensure that they are well informed about the significance and relevance of the information literacy skills in 21 century. This can be done through organising workshops to educate and ensure that academics are well equipped with necessary skills regarding the importance of information literacy education

to themselves as well as their students. Training should also be organised for librarians on the usage of LMS in educating students about library services and collection.

- The findings revealed that libraries have experienced internet interruption, power outage. It is imperative therefore that librarians continue to explore other digital platforms such as WhatsApp, Skype and most importantly make both self-learning tools downloadable so that they can be read offline. This will allow students to download tutorials and save them in their devices and at the same time enable them to share the content with others via WhatsApp. However, the libraries should be applauded for the provision made for online learning tools to cater for students in the absence of a librarian.
- The results have also shown that there are several assessment tools in place to determine whether students have grasped the concept they are expected to learn. However, the researcher feels that assessment tool such as quiz is more a self-assessment tool in which librarians have no control over. As a result, librarians would not be able to know whether students have really mastered the concepts or would need to learn more.
- The study recommends libraries to introduce basic computer literacy for first year undergraduate students prior to information literacy training sessions. This will help students from less fortunate backgrounds to acquire basic skills to operate IT facilities and enhance their participation in library instruction of any kind.
- Lastly, from these findings and bearing in mind the shortcomings associated with online based information literacy content development and delivery, the researcher confidently concludes that the results of the study will not only assist the University of Namibia libraries but will also help fellow libraries in Africa who wish to develop online tutorials and make use of their libraries webpages as to deliver library instruction to their users.

## **5.5 Future research directions**

- A study on the use of library web pages for online information literacy tutorials involving students should be conducted in order to determine the benefits and challenges encountered by the students.
- The study reflected many challenges among others; slow internet connectivity, power outage and poor collaboration between libraries and academics. These challenges necessitate another further study to determine the impact poor internet connection; or power outage has on the access and use of online contents.
- It will be worth researching on the use of online-based tutorials and students preferences for the online information literacy delivery.

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## Appendix A: Observation Checklist

|  |  |  |
|--|--|--|
| <b>University library websites checklist</b>   |  |  |
| <b>Institution name</b> _____                  |  |  |
| <b>Website inspected</b> _____ <b>by</b> _____ |  |  |
| <b>Date</b> _____                              |  |  |

| Description                    | Used | Not used |
|--------------------------------|------|----------|
| <b>Content</b>                 |      |          |
| Library orientation            |      |          |
| OPAC search                    |      |          |
| Develop search strategies      |      |          |
| Evaluation Criteria            |      |          |
| Electronic resources searching |      |          |
| Internet use                   |      |          |
| Citation and referencing       |      |          |
| Computer literacy              |      |          |
| <b>Teaching strategies</b>     |      |          |
| Games                          |      |          |
| Quizzes                        |      |          |
| YouTube                        |      |          |
| Audio                          |      |          |
| PowerPoint presentations       |      |          |
| Video (Live demonstrations)    |      |          |
| <b>Technologies used</b>       |      |          |
| Blogs                          |      |          |
| Wikis                          |      |          |

|   |  |  |
|---|--|--|
| RSS feeds   |  |  |
| Social networks i.e. Facebook, Twitter, LinkedIn, Myspace |  |  |
| Instant messaging (IM)                                    |  |  |
| Social Bookmarks  |  |  |
| YouTube   |  |  |
| Libguides   |  |  |
| Flickr  |  |  |
| Mash up (Google map, Google calender)                     |  |  |
| <b>Assessment techniques</b>                              |  |  |
| Web based quizzes   |  |  |
| Online multiple choice                                    |  |  |

## **Appendix B: Informed consent form and interview question for Information Literacy**

### **Coordinators**

#### **B1: Informed consent form for Information Literacy Coordinators**

##### **Consent form for Information Literacy coordinators**

**Student Name:** Laimi Iyambo

**Student Number:** IYMLAI001

**Degree:** Masters in Library and Information Studies

**Department:** Library and Information Studies Centre

**Institution:** University of Cape Town

**(Minor) Dissertation Title:** Utilisation of library websites for information literacy delivery in five selected universities in South Africa.

**Supervisor:** Dr Connie Bitso

Please note that signing below you agrees and give consent to participate in this research:

1. I hereby confirm that I have been informed by the researcher of this study, Laimi Iyambo, about the nature, conduct, benefits and risks of this study.
2. I will have the opportunity to ask questions related to the study.
3. I understand that all information gathered will be treated with confidentiality and presented with anonymity.
4. I agree/disagree that the interview will be recorded.
5. I voluntarily agree to take part in this research; I understand that I have the right to withdraw at any time; and I am not obliged to answer all the questions

\_\_\_\_\_

Name of participant

\_\_\_\_\_

Signature of participant

Date \_\_\_\_\_

## **B2: Cover letter for Information Literacy Coordinator**

### **Cover letter for Research participant: Information Literacy Coordinator.**

Dear Participant,

My name is Laimi Iyambo. I am a student undertaking a Master's degree in Library and Information Studies at the University of Cape Town. I am presently conducting a study on "Utilisation of library websites for information literacy delivery in five selected universities in South Africa".

I am approaching you as a potential research participant to assist in providing information related to delivery of information literacy through library websites in your institution. I kindly request your participation in the study through an interview that will take about 45 minutes of your time. I assure you that the information you will provide will strictly be used for the purpose of completing the dissertation and publications therefrom. It will be treated with confidentiality and presented anonymously. Participation in this research study is voluntary and should you wish to withdraw from participating, please feel free to do so at any time. For further inquiries, please do not hesitate to contact me at contact details below.

Thank you for your time.

**Researcher:** Laimi Iyambo (**Student no:** IYMLAI001)

**Tel:** +264 61 206-7251

**Mobile:** +264 811272994

**Email:** niyambo81@gmail.com

**Institution:** University of Cape Town

**Programme:** Masters in Library and Information Studies

**Supervisor:** Dr Connie Bitso

**Email:** [connie.bitso@uct.ac.za](mailto:connie.bitso@uct.ac.za))

### **B3: Interview schedule for information literacy coordinators**

10. What are the components of ACRL that are applicable to your Information Literacy program of your Institution?
11. What are the key aspects you consider when developing the information literacy curriculum?
12. How do you plan information literacy curriculum that speaks to ACRL frames and deliverable through library websites?
13. How do you reach out to students with different learning styles through online delivery? Which teaching strategies do you use?
14. Which assessment tools do you use for web-based information literacy teaching and learning? How reliable are these tools?
15. Which other applications and technologies do you use when preparing web-based information literacy tutorials?
16. What are the advantages and disadvantages of these applications and technologies?
17. What challenges do you encounter when planning information literacy curriculum, delivery and assessment through the website?
18. Do you have any suggestions on how to overcome these challenges?

Thank you for your time.

**Researcher:** Laimi Iyambo (**Student no:** IYMLAI001)

**Tel:** +264 61 206-7251

**Mobile:** +264 811272994

**Email:** niyambo81@gmail.com

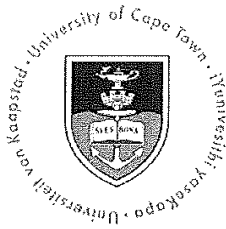
**Institution:** University of Cape Town

**Programme:** Masters in Library and Information Studies

**Supervisor:** Dr Connie Bitso

**Email:** [connie.bitso@uct.ac.za](mailto:connie.bitso@uct.ac.za)

## Appendix C: Ethical clearance certificate: University of Cape Town



### Library and Information Studies Centre

University of Cape Town  
Upper Campus

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

Ref. no.: UCTLIS201710-19

30 October 2017

Dear Ms Iyambo

I am pleased to inform you that ethical clearance has been granted by the Ethics Review Committee of the Library and Information Studies Centre on behalf of the Humanities Faculty of the University of Cape Town for your Master's study entitled: *Investigating the use of library websites for information literacy delivery in five selected universities in South Africa*.

I wish you well with your study.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Michelle Kahn'.

Ms Michelle Kahn

Chair, Department (LISC) Research Ethics Committee

# C1: Approval to access UCT staff for research purpose

|       |  |   |
|-------|--|---|
| HR194 | <b>ACCESS TO UCT STAFF FOR RESEARCH PURPOSES</b> |  <b>UNIVERSITY OF CAPE TOWN</b><br>IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD |
|-------|--|---|

### NOTES

- Forms must be downloaded from the UCT website: <http://forms.uct.ac.za/forms.htm>
- This form must be completed by applicants who are requesting to access UCT staff for the purpose of research.
- A copy of the research proposal as well as the Ethics Committee approval must be attached.
- It is the responsibility of the researcher/s to apply for ethical clearance from the relevant Faculty's Research in Ethics Committee (RIEC).
- If you are requesting staff information, you are required to complete the HR Information Request Form (HR190) and submit it together with all the required documentation.
- The turnaround time for a reply is approximately 10 working days unless specified as urgent.
- Return the completed application form and all the above documentation to Joy Henry via email: [joy.henry@uct.ac.za](mailto:joy.henry@uct.ac.za); or deliver to: For the Attention: Executive Director, Human Resources Department, Bremner Building, Room 214, Lower Campus, UCT.

### SECTION A: APPLICANT DETAILS

|   |   |               |                       |
|---|---|---------------|-----------------------|
| Title   | Ms  | Name          | Laimi Iyambo          |
| Telephone number  | +264 811272 994   | Email address | lymlai001@myuct.ac.za |
| Student number  | IYMLAI001   | Staff number  | n/a                   |
| Visiting researcher ID / passport number                            | P0440947  |               |                       |
| Faculty Officer contact details                                     | n/a   |               |                       |
| University or institution at which employed or a registered student | University of Cape Town   |               |                       |
| Faculty or department in which you are registered or work           | Faculty of Humanities: Department of Library and Information Studies Centre |               |                       |
| Address (if not UCT)  | ERF 2573 Omongo street, Wanaheda  |               |                       |
|   | Windhoek  |               |                       |
|   | Namibia   |               |                       |

### SECTION B: SUPERVISOR DETAILS

|               |                  |                    |                        |
|---------------|------------------|--------------------|------------------------|
|               | Title and name   | Telephone number   | Email address          |
| Supervisor    | Dr. Connie Bitso | +27 (0)21 650-2488 | connie.bitso@uct.ac.za |
| Co-Supervisor | n/a              |                    |                        |

### SECTION C: APPLICANT'S FIELD OF STUDY (if applicable) / TITLE OF RESEARCH PROJECT / STUDY

|   |  |                             |  |
|---|--|-----------------------------|--|
| Degree  | Masters in Library and Information Studies   |                             |  |
| Research project or title                                     | Investigating the use of library websites for information literacy delivery in five selected universities in South Africa. |                             |  |
| Research proposal attached                                    | <input checked="" type="checkbox"/> Yes  | <input type="checkbox"/> No |  |
| Target population (number of UCT staff)                       | 1  |                             |  |
| Amount of time required for an interview and/or questionnaire | 45 minutes   |                             |  |
| Lead Researcher details                                       | Laimi Iyambo   |                             |  |
| Proof of ethical clearance status attached                    | <input checked="" type="checkbox"/> Yes  | <input type="checkbox"/> No |  |

### SECTION D: FOR OFFICE USE (Approval status to be completed by the Executive Director, Human Resources or Nominee)

|                     |   |                             |   |                       |            |
|---------------------|---|-----------------------------|---|-----------------------|------------|
| Support or approval | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | Role                                    | Signature             | Date       |
| Supported?          | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | Joy Henry (Office Co-Ordinator)         | <i>Joy Henry</i>      | 28/11/2017 |
| Approved?           | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | Miriam Hoosain (Executive Director, HR) | <i>Miriam Hoosain</i> | 28/11/17   |

## Appendix D: ethical clearance certificate: University of Witwatersrand



OFFICE OF THE DEPUTY REGISTRAR

14 November 2017

Ms Laimi Iyambo  
Student number IYMLAI001  
Masters in Library and Information Science Candidate  
University of Cape Town

### TO WHOM IT MAY CONCERN

**"Investigating the use of library websites for information literacy delivery  
in five selected universities in South Africa"**

This letter serves to confirm that the above project has received permission to be conducted on University premises, and/or involving staff and/or students of the University as research participants. In undertaking this research, you agree to abide by all University regulations for conducting research on campus and to respect participants' rights to withdraw from participation at any time.

If you are conducting research on certain student cohorts, year groups or courses within specific Schools and within the teaching term, permission must be sought from Heads of School or individual academics.

Ethical clearance has been obtained.

A handwritten signature in black ink, appearing to read "Nicoleen Potgieter", enclosed in a hand-drawn oval.

Nicoleen Potgieter  
University Deputy Registrar

## Appendix E: Ethical clearance certificate: University of KwaZulu Natal



15 November 2017

Laimi Iyambo  
Library and Information Science  
University of Cape Town  
Email: [IYMLAI001@myuct.ac.za](mailto:IYMLAI001@myuct.ac.za)

Dear Laimi

### RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate studies, provided Ethical clearance has been obtained. We note the title of your research project is:

*"Investigating the use of library websites for information literacy delivery in five selected universities in South Africa".*

It is noted that you will be constituting your sample as follows:

- with a request for responses on the website. The questionnaire must be placed on the notice system <http://notices.ukzn.ac.za>. A copy of this letter (Gatekeeper's approval) must be simultaneously sent to ([govenderlog@ukzn.ac.za](mailto:govenderlog@ukzn.ac.za)) or ([ramkissoob@ukzn.ac.za](mailto:ramkissoob@ukzn.ac.za)).

Please ensure that the following appears on your questionnaire/attached to your notice:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely



**MR SS MOKOENA**  
**REGISTRAR**

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#### Office of the Registrar

Postal Address: Private Bag X54001, Durban, South Africa  
Telephone: +27 (0) 31 260 8005/2206 Facsimile: +27 (0) 31 260 7824/2204 Email: [registrar@ukzn.ac.za](mailto:registrar@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)

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