INFORMATION LITERACY LEARNING EXPERIENCES OF FOURTH-YEAR PSYCHOLOGY STUDENTS IN KENYAN UNIVERSITIES

by

Ephraim Mudave Kanguha

(BSc, MLS, MAMS)

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DECLARATION

I, **Ephraim Mudave Kanguha,** declare that:

1. The research reported in this thesis, except where otherwise indicated, is my original research.

2. This dissertation/thesis has not been submitted for any degree or examination at any other university.

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Ephraim Mudave Kanguha

Supervisor
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ABSTRACT

This study explored the information literacy (IL) learning experiences of Kenyan undergraduate students by focusing on fourth-year psychology students in four universities. Although there is a growing advocacy for IL in higher education, there seems to be little effort to understand how it is experienced by students. Several studies have concentrated on first-year students, with a limited number focusing on those who are exiting the university. This study addresses the following key questions: What are the IL learning experiences of psychology students in Kenyan universities; what are the goals of the IL programme; what pedagogical approaches are applied in delivering IL; what is the role of information communication technology (ICT) in the delivery of IL; what are the perceptions of students and staff towards IL; and what are the challenges affecting delivery of IL.

This research adopted the seven faces of IL model by Bruce as its theoretical framework; and applied both qualitative and quantitative methodologies. Empirical data collected from in-depth interviews, questionnaires and document reviews demonstrate the different conceptions and experiences of IL by students. Results revealed that IL learning experiences of fourth-year psychology students positively related to activities such as using ICTs, interaction among students and interactions between students and librarians. There appeared to be no single experience or set of activities that affected IL learning. The findings place academic librarians at the forefront in championing IL learning in their respective universities, but note that they cannot do it alone; there is need for a collaborative approach that includes faculty and senior administrators.

Challenges that faced IL initiatives included lack of adequate learning resources and facilities, low number of qualified staff to teach IL, lack of IL training for lecturers and librarians and large class sizes. Further challenges included limited time allocated for IL learning, unavailability of students during IL sessions and lack of an IL policy framework at institutional or national level. The study recommended that all stakeholders in the university be involved in IL initiatives to produce an information-literate graduate, because successful IL interventions are a shared responsibility. The study further recommended increased lecturer-librarian collaboration and support from academic leadership. Universities must ensure there is an IL policy that would guide development and implementation of IL.

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DEDICATION

I dedicate this work to my lovely wife, Mary, our daughter, Shalom, our sons, Isaac and Jesse, who supported, encouraged and prayed for me during my studies.

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LIST OF ABBREVIATIONS AND ACRONYMS

1. AAHE - American Association for Higher Education
2. AASL - American Association of School Librarians
3. ACRL - Association of College and Research Libraries
4. ALA - American Library Association
5. ANZIL - Australian and New Zealand Institute for Information Literacy
6. CAUL - Council of Australian University Librarians
7. CHE - Commission for Higher Education
8. CILIP - Chartered Institute of Library and Information Professionals
9. CIPDE - Centre for Intellectual Property in the Digital Environment).
10. CONUL - Consortium of National and University Libraries
11. CUE - Commission for University Education
12. DelPHE - Development Partnerships in Higher Education
13. ICTs - Information Communication Technologies
14. IL - Information Literacy
15. INASP - International Network for the Availability of Scientific Information
16. INFUL - Information Literacy Network of Finnish University Libraries
17. KLISC - Kenya Libraries and Information Services Consortium
18. LCD - Liquid-crystal-display
19. LIS - Library and Information Science
20. LISA - Library and Information Science Abstracts
21. MDGs - Millenniums Development Goals
22. OPAC - Online Public Access Catalog
23. REBIUN - Spanish University Library Network
24. SCECSAL - Standing Conference of Eastern, Central and Southern Africa Library and Information Associations
25. SCONUL - Society of College, National and University Libraries
26. SWIM - Streaming Web-based Information Modules
27. UNESCO - United Nations Educational Scientific and Cultural Organization
28. UNISA - University of South Africa
29. UON - University of Nairobi
30. USIU - United States International University
31. WSIS - World Summit on Information Society

CHAPTER ONE

INTRODUCTION

1.1 Background to the Research Problem

The purpose of this study was to investigate the information literacy learning experiences of fourth year Psychology students in Kenyan universities. Investigating this subject is of significance especially given the growing student-focused approaches to learning (Ertl *et al,* 2008). Besides, learning experiences are an integral part of any educational process (McCluskey, 2009) that can help in the design of the curriculum and pedagogy. Gallagher (2011) asserts that learning experiences provide an indication of what learning interventions might be needed to achieve desired end goals and outcomes.

Student learning experience is, to a large extent influenced by their information literacy skills. In this regard, Diehm & Lupton (2014) state that information literacy helps learners *to find and use information.* Furthermore Information literacy *enables* learners to acquire knowledge and skills that enhance their interaction with information for decision-making or problem-solving. Bruce and Partridge (2011:1) observed that research on information experiences opens up ways of understanding and interpreting how people engage and interact with the information environment. Whereas learning to be information literate implies an end to a process, information literacy learning implies a continuum.

Information literacy (IL) as a concept is traced back to Paul Zurkoski in 1974. As president of the Information Industry Association during a US National Commission on Libraries and Information Science (Zurkowski, 1974) he used the term *information literate* to refer to people trained to apply information resources to their work (p.6). The present study adopts the American Library Associationôs Presidential Committee on Information Literacyôs (1989, para.3) seminal definition of information literacy as a set of abilities to recognize an information need, locate and access the needed information, evaluate it for accuracy and authenticity and use the needed information effectively. Literature is full of definitions and explanations of IL, with Virkus (2003) observing that both European and Australian versions do not deviate much from the original definition by ALA. Other definitions cover some

elements of ALAôs definition and expand them in some way, or add a new perspective (Langford, 1998). ALAôs definition sees IL as an important tool, both for academics and life beyond the academy. It forms the foundation on which IL discipline specific standards are anchored. Based on this definition, various interest and working groups within the American Library Association (ALA) have developed guidelines and standards for specific disciplines, in an attempt to understand how IL relates to individual disciplines.

This study sought to understand student IL learning experiences in the context of psychology as a discipline. Psychology is known for its scientific approach to delivering its courses (McKinney *et al.*, 2011). Psychology students were selected because in literature, this is one discipline that has successfully integrated IL as part of the curriculum (ALA, 2013). While other disciplines offer information in an ad hoc manner, psychology tends to have IL as part of the regular courses that may be offered to its students. This is perhaps borne out of the fact that psychology programmes are largely inquiry-based (Hepworth & Walton, 2009).

Building on the ALA definition of IL, American College and Research Libraryôs (ACRL) Education and Behavioral Sciences Section Psychology Information Literacy Working Group developed four IL standards for undergraduate psychology students, stating that an information literate psychology student should be able to:

1. Determine the nature and extent of the information needed;
2. Access needed information effectively and efficiently;
3. Evaluate information and its sources critically and incorporate selected information into her or his knowledge base; and,
4. Individually or as a member of a group, use information effectively to accomplish a specific purpose (Association of College and Research Libraries, 2010).

These four standards are adapted from ACRLôs five IL standards. The fifth ACRL standard deals with ethical and legal aspects of IL and is assumed to be cross cutting in the four themes outlined above. The aim of ACRL Psychology IL standards is to enable librarians to establish relevant content for IL instruction to psychology students, facilitate evaluation of IL skill level of psychology students by providing competencies to be assessed and encourage collaboration between librarians and psychology lecturers to ensure IL is included in their psychology research methods courses as a basic requirement (Thaxton, Faccioli & Mosby, 2004).

Increasingly, higher educational institutions the world over and library professional associations have recognized information literacy (IL) as an important tool to equip students with skills to be effective users of information. They are consequently introducing information literacy programmes in their curriculum (Maybee, 2006; Baro and Zuokemefa, 2011; Jiyane and Onyancha, 2010). In Africa, the Standing Conference of Eastern, Central and Southern Africa Library and Information Associations (SCECSAL) is one of the professional bodies that advocate for information literacy as a key component of university education. Other information professional bodies such as the International Federation of Library Associations (IFLA), Society of College, National and University Libraries (SCONUL), American College and Research Libraries (ACRL), Australian and New Zealand Institute for Information Literacy (ANZIL) and Council of Australian University Librarians (CAUL) are leading proponents of integrating information literacy into the curriculum. They all recognise IL as a critical component in university education.

Shapiro and Hughes (1996) observed that IL goes beyond teaching students how to use information and include making learners think and be able to make informed choices and decisions. They believe students in institutions of higher learning are well placed to drive the information society because most basic and advanced information skills are acquired at schools and universities respectively. The information society alluded to above by Shapiro and Hughes refers to a society where everyone can benefit from the opportunities that Information Communication Technologies (ICTs) can offer (Martin, 2005:31). The main feature of the Information Society is the intelligent distributed environment, where access to information in heterogeneous databases, and interpersonal communication, is concurrently available through a variety of access technologies (Stephanidis & Emiliani, 1999:21).

Keenan (2010) and Martin (2005:32) assert that information literacy is a prerequisite for any nation to becoming an information society and achieving the millennium development goals that include among others eliminating poverty and hunger; achieving universal primary education; gender equality; reducing child mortality; improving maternal health; lowering HIV/AIDS; and enhancing environmental sustainability. The Lyon Declaration on Access to Information and Development (IFLA, 2014:para.2) recognizes societyôs access to information,

knowledge and Information Communication Technologies (ICTs) as an important driver for sustainable development and the improvement of the wellbeing of society.

1.1.1 International Status of Information Literacy at Universities

Different regions and countries around the world have embraced the concept of information literacy in diverse ways, and are at different levels of integrating and implementing it in their curricula.

In most American and Canadian universities such as the University of Illinois, Kent State University, Stanford University, McMaster and Queens University, well-established IL programmes exist. These programmes are believed to be critical in meeting university educational goals. In the US, IL is operationalized within standards and guidelines. Information Literacy Standards for Higher Education in the US (ACRL, 2000) were endorsed by the American Association for Higher Education (AAHE) in October 1999. These standards and guidelines serve as points of reference for various IL initiatives. Similarly, several Canadian and American universities have adopted the ACRL standards by integrating them into their IL curricula (Goff, 2007:128). In North America, the Association of College and Research Libraries champions the integration of IL in mission statements of universities, making IL move from being an issue of librarians to being the concern of professors and administrators alike. ACRL (2012) underscore the need for collaborative efforts in offering IL, saying collaboration between librarians, administrators and the faculty is key to successful implementation of IL. In some American and Canadian universities, such as New Jersey City University, Stanford University, Kent State University and the University of California, online learning tools, standards and rubrics are being used to advance the IL ethos. American College and Research Libraries (ACRL) is a leader in IL Competency Standards for Higher Education. These standards cover a definition of information literacy, a description of how IL relates with information technology, higher education and guidelines for IL assessment. Each standard is accompanied by performance indicators and expected outcomes in IL teaching and learning.

Comparatively, IL in Latin America is still a scattered activity, with only a few higher education institutions running IL programmes (Lau, 2007:31). These institutions include

Universidad Veracruzana, Universidad Autonoma de Ciudad Juarez and Universidad del Valle de México. Some universties in Colombia have developed IL programme. These universities include Universidad de los Andes-Bogotá and Universidad San Buenaventura-Cali. The IL content offered by these universities include multimedia videos that give library tours and demonstrate how to use electronic resources in the libraries. Lau (2007) observed that the term ôinformation literacyô in most Spanish-speaking countries in Latin America is associated with basic skills of reading and writing and this greatly affects the development of IL, especially among academics. Many countries do not have national IL standards or guidelines. Countries such as Colombia, Uruguay and Argentina have adopted IL standards published in Mexico, which are similar to those used in the US and Canadian universities. In these countries, resources that are used to promote IL include manuals, flyers and tutorials.

Universidad de las Américas in Puebla and Universidad Autónoma de Ciudad Juárez (Lau, 2001) are among universities that offer IL courses for credit in undergraduate programmes in Latin America. A key initiative of the for-credit IL course is a web-based course required for all first-year students in over 29 universities and polytechnics that form the Clavijero Consortium of Higher Education in Veracruz in the region. From the year 2000, several doctoral dissertations have been written on various aspects of information literacy in library schools whose themes range from feasibility of teaching IL to its implementation (Lau, 2007). These studies perhaps suggest that IL offerings are growing in the region because of the realization of its importance in higher education. University libraries in the region are increasingly organizing workshops and seminars to address the lack of formal training for librarians and information professionals with regard to delivery of IL.

In Australia and New Zealand, IL in universities is well-established, understood and accepted. Consequently IL has been cultivated and institutionalised through practice and research (Peacock, 2007:7). IL in universities in this region enjoys a national framework of standards that inform the inclusion of IL into educational curricula. Most Australian institutions of higher learning explicitly or implicitly state that acquisition of information literacy skills is one of the core outcomes expected from the graduates. Several web-based IL learning tools are available to university students in Australia and New Zealand, including tutorials and blogs. These tools cover skills in information searching, retrieval, management and evaluation (Peacock,

2007:10). The Council of Australian University Librarians (CAUL, 2001) supports teaching of IL in the Australian academic context. An IL framework has been established by the Australian and New Zealand Institute for Information Literacy (ANZIL) and the Council of Australian University Librarians (CAUL) to offer principles, standards and best practices for Australia and New Zealand (Bundy, 2004).

Turning to the European continent, the United Kingdom (UK) and Irelandôs universities have a well-established practice of IL, though the focus tends to be on Information Technology (Webber & McGuinness, 2007, 113). Universities in the UK have adopted the Society for College, National and University Librariesô (SCONUL) seven pillars model of information literacy (SCONUL Working Group on IL, 1999) as their IL institutional framework. Similarly, the Consortium of National and University Libraries (CONUL) in Ireland has been responsible for spearheading IL initiatives in universities and colleges of higher learning. Free online IL learning tools exist in both countries, with some universities embedding IL in the curricula for credit. IL initiatives in UK and Ireland universities are supported by several organizations that focus on promoting and institutionalising IL in higher education at institutional and national levels (Corrall, 2007:23).

The rest of Europe, especially in the Nordic countries, IL initiatives in higher education have been fronted by academic libraries. An example is the Information Literacy Network of Finnish University Libraries under the leadership of the Helsinki University Library. In Sweden, the Swedish education policy framework requires that all university graduates should be information literate, although it does not use the exact phrase (Ministry of Education and Research, 2006). This has been helpful in convincing individual universities that information literacy is indeed important. Denmark, Finland and Norway lack national guidelines for university IL initiatives, though the practice of IL is growing very fast in the universities, with several universities, including Aalbog University, the University of Eastern Finland, Chalmers University of Technology and the Business School in Bergen, hosting IL online tutorials (Tolonen 2007:49-50). Some of the online tools include Streaming Web-based Information Modules (SWIM), Search and Write and VIKO that are interactive in nature and help students search the information sources they need and write good research papers by having skills to make good choices of search strategies.

In the absence of national guidelines, the ACRL information literacy standards have been translated to the Finnish and Swedish languages to provide guidelines and standards for IL. In other parts of Europe, such as Spain, Information Literacy in universities is widely recognised, though less pronounced compared to the USA, Australia and the UK (Pinto and Sales, 2006:76). However, all Spanish universities are expected to offer information literacy in various forms, including optional credit courses, IL online tutorials, IL educational portals and library tours guided by the provisions of the Spanish University Library Network (REBIUN).

In contrast with English-speaking European countries, French-speaking European countries, including Belgium, France and Switzerland, do not have established IL frameworks. Consequently, individual universities have IL at different levels of adoption. Without a clear national IL framework for universities, the three countries have generally limited IL activity in their universities (Chevillotte, 2007:23), though some have embedded IL in their curricula. Chevillotte further observes that lack of national frameworks has led to lack of institutional funding for IL initiatives. Initiatives like the *Edu*DOC, a working group at the University of Liege in Belgium, has kept IL activities up and running, although not specifically focused on university education. *Edu*DOC seeks to promote IL activities in French-speaking Belgium. France, by law, requires that IL courses be embedded in the curricula, and, unlike Belgium, IL enjoys more support from the government.

Turning to Africa, Information Literacy is relatively new, but its importance is growing steadily. In South Africa, for example, a policy framework for IL in tertiary institutions covers ICT, education, library and information services. The framework is responsible for the growth and development of the concept of IL. Most institutions of higher learning offer library orientation courses and integrate IL modules into the academic curricula, in addition to *ad hoc* interventions when requested by teachers and students (Underwood, de Jager & Nassimbeni, 2007:149). Many South African universities offer generic online courses and guidelines for IL interventions. Fidzani (2007:110) pointed out that the South African INFOLIT initiative is responsible for the development of IL in South African Universities, compared to other countries in the region. According to Underwood (2002:5), INFOLIT is aimed at promoting the IL concept. Consequently, a series of pilot projects have been launched to popularise IL

education in the Western Cape region. Results of this initiative include Western Cape librarians coming together to develop curricula, with the IL component using best IL practices. At the University of Cape Town, the ñInformation tools and skillsò credit course has been mounted online (Fidzani, 2007:111). Several IL related initiatives have been implemented at most South African universities, including the University of South Africa (UNISA), the University of Fort Hare, the University of Cape Town and the University of Pretoria, with the push towards IL integration in curricula growing with time (Fidzani, 2007).

In the rest of Sub-Saharan Africa, lack of national or regional frameworks or standards, as is the case in America, Europe, Australia and South Africa, has slowed down the development of IL and its integration in the curriculum (Baro & Zuokemefa, 2011; Idiodi, 2005). Nevertheless, there are emerging efforts to promote IL in many of the countries in Africa. For example, in Ghanaian universities a number of IL initiatives are being implemented. They include library, computer, media and communication skills literacies at the University of Ghana and University of Cape Coast (Dadzie, 2009). Ashesi University College in Ghana hosts online tutorials, some of which are links to tutorials developed elsewhere (Fidzani, 2007:111). In Zambia, Akakandelwa (2010) observed that IL in universities is getting more attention, with most universities offering orientation programme to new students, although Copperbelt University and the University of Zambia were the only ones to have introduced formal communication skills courses in the curriculum.

Lwehabura and Stilwell (2008), in the context of Tanzania, observe that IL is still new in university curricula and lack of an IL framework or national policy has made it difficult to co-ordinate IL activities on a larger or even smaller scale. Universities with some form of IL are the Sokoine University of Agriculture and St. Augustine University of Tanzania. Fidzani (2010), in Botswana, revealed that IL at the University of Botswana enjoys the support of the entire university administration and has made major advances with funding received through the Development Partnerships in Higher Education (DelPHE) project. The aim of the DelPHE project is to foster quality student-focused learning, teaching and research, and information literacy. The University of Botswana mounted an online IL module for first-year students in 2006 (Mutula *et al*., 2006).

1.1.2 IL in Kenyan Universities

This study is situated at selected universities in Kenya. Kenya is a signatory to the World Summit on Information Society (WSIS) Declaration of Principles and has committed herself to establishing an inclusive information society by 2015 (WSIS, 2005). As a follow-up to the signing of the WSIS, the Kenyan government through e-government platform and National Information and Communication Technology (ICT) Policy aims to connect all government institutions from national to the village level to enable its citizens access information in time on all aspects of public service (Directorate of e-Government, n.d and Ministry of Communications and Information, 2011:49). Kenya governmentôs efforts in promoting an information society among its people provides an important basis for IL development in the country (Tilvawala et al., 2009:6).

Through Vision 2030, the Government of Kenya (2007:9) has affirmed its commitment to developing an informed and competitive labour base, by ensuring an education system and training that is underpinned by life-long learning. Vision 2030 is a long-term national planning strategy that is founded on Economic, Social and Political pillars to drive the countryôs development agenda between 2008 and 2030. The strategy aims to transform Kenya into a newly industrialising, middle-income country, with the capacity to provide a high quality life to all its citizens. The government strategy in this regard clearly states that an information literate society would be instrumental in the achievement of Vision 2030. This thinking is consistent with the principle that the achievement of development goals is enhanced by IL through empowering people to critically interpret and use information and to become information producers (Abid, 2004). In the same vein, Lilyard (2011) explains that IL underpins many Millennium Development Goals (MDGs), such as reducing child mortality, extreme poverty and hunger; combating diseases and developing global partnerships for development. For this reason he advocates for the integration of IL in national development strategies.

The Commission for University Education (CUE) (2014:105-106) in Kenya has developed IL guidelines for universities. The CUE is charged with the regulation and co-ordination of higher education throughout the country, through registration, classification, standardization, accreditation of institutions and programmes and supervision. According to CUE, university libraries in Kenya must establish and oversee information literacy programmes in their

respective institutions, including developing IL policies. However, the guidelines are scanty and do not give specific parameters that would guide the processes.

Given the situation described above, universities must continually strive to equip students with information literacy skills for the nation to realise its development and information society goals. Equipping students in the university with information literacy skills is more important considering that students from secondary schools in Kenya seem to join the universities when they have limited or no skills in information searching and use (Dadzie, 2009; Jiyane and Onyancha, 2010 and Amunga, 2011).

Amunga (2011), Mutisya (2010) and Mutula (2002) concur that the rapid expansion of university education in Kenya in recent years has had a negative impact on the quality of learning. Many universities have opened campuses in major towns and started evening programmes without adequate teaching and learning facilities and human resources to cope with the increased student enrollment. Besides, the 8-4-4 system of education in Kenya has been criticized for giving little attention to quality considerations (Mutula, 2002; Kamande, 2009; Waweru, 2009; Ongalo, 2009; Mutisya, 2010). The 8-4-4 education system provides 8 years of primary education, 4 years of secondary education and a minimum 4 years of university education. Gitonga (2010:49) cautions that the Kenyan education system must therefore be geared towards making graduates information literate, rather than coaching them to pass exams and secure jobs, as is the case at the moment.

Kenya had 22 chartered public universities and 17 chartered private universities at the time of doing this study (Comission for University Education, 2014). IL at these universities remains generally rudimentary and unco-ordinated, due to a lack of an integrated national information policy that would provide a framework for its implementation. IL activities are thus left to individual universities designing and implementing the programmes. Besides the 22 public universities, there were nine university constituent colleges; while the 17 private chartered universities had five university constituent colleges and 13 other institutions operating with letters of interim authority (Commission for University Education, 2014).

Kavulya (2003) noted that most of the students who join universities in Kenya do not have experience is using libraries or ICT and therefore feel intimidated by the huge university libraries. The efforts of Kenyan universities to address the issue of IL have included the introduction of a communication skills course to freshmen. This course is reportedly ineffective (Kavulya, 2003), due to the large number of students and the lack of trained staff to teach it. Additionally, librarians only teach a portion of the course and are not even involved in its assessment.

The semblances of IL initiatives that one finds in most universities in Kenya are orientation programmes offered to first-year students. Such orientation programmes include a tour of the library and introduction to library facilities and resources; and how to access the resources. For example, at the United States International University and the Africa International University, respectively, special IL sessions are planned by librarians where students sign up to attend the lessons that are aimed at improving the studentsô IL skills levels. Librarians are usually at hand to offer one-on-one assistance with regard to searching and using information. Inadequate facilities, especially computers, have been identified as challenges to IL teaching and learning in Kenyan universities (Kavulya, 2003).

The International Network for the Availability of Scientific Information (INASPôs) Programme for the Enhancement of Research Information (PERI) and the Kenya Libraries and Information Services Consortium (KLISC) have conducted a number of IL workshops involving librarians from the universities. The initiative has also sponsored training on IL related topics, including access to e-resources, plagiarism and copyright. However, this and other co-ordinated initiatives are not adequate to offer a strong basis for IL development in Kenyan universities.

1.2 Statement of the Problem

The present study was motivated by the rising concern in Kenyan university education about the poor analytical and problem-solving skills among students entering and graduating from universities without the necessary skills to fit effectively into the labour market (Kamande, 2009; Ongalo, 2009; Mutisya, 2010). Information literacy, being an important driver for development and the attainment of MDGs (Gitonga, 2010), must be founded on a strong policy

and regulatory framework to have the desired effect. Therefore, how students learn IL should concern academic institutions.

The study focuses on IL learning experiences of fourth-year psychology students. It is further motivated by the fact that IL literature seem to concentrate on experiences of freshmen (Kavulya, 2003; Mutula, 2006; Maybee, 2005; Akakandelwa, 2010; Chipetta, Jacobs and Mostert, 2008; Fidzani, 2010) and little research has been done on the IL experiences of final-year undergraduate students entering the labour market. Most studies on IL are generic and cross-disciplinary. Lupton (2004; 2008:400) is of the opinion, that although IL skills apply across disciplines, it is important to teach IL within a topic or subject. Genoni and Partridge (2000) found that students in a given discipline have unique research needs that should be addressed specifically in order to have more successful learning experiences. Osborne (2011), in a study of IL conceptions of undergraduate nursing students, found that IL was perceived as part of a nurseôs professional role in supporting evidence-based practice. McKinney *et al*. (2011) demonstrated that there is value addition to the teaching of IL in psychology department and IL should therefore be embedded in the psychology curriculum. A search of leading psychology databases, including PsycINFO, Emerald Insight, Psych Articles, Psychology Journals and Library and Information Science Abstracts (LISA), revealed limited attempts in literature to investigate IL learning experiences in psychology programmes in Kenyan universities

An investigation into IL learning experiences of students in a psychology programme was motivated by the fact that standards and outcomes for assessing an IL literate student are widely included in the LIS literature. IL learning experiences of students in psychology is focused on critical thinking and analytical problem-solving skills. The inquiry-based approach to learning psychology influenced the choice of the discipline because students are expected to possess more critical thinking skills as compared to their counterparts in other disciplines; and critical thinking is one of the key goals of IL. Practice of psychology therefore requires persons trained and skilled in establishing a problem, finding right information, and critically evaluating and applying it in a manner that meets the information need, which is the purpose of IL learning. Raskin (2002:2) contends that human meaning-making is psychologyôs primary focus of inquiry. By investigating the IL competencies of fourth-year psychology students it is

expected that findings will reveal the extent to which the undergraduate students have, throughout their four years of study, acquired and mastered the necessary competencies to enable them to effectively fit into the labour market and become lifelong learners. The outcome from the study will help future IL curriculum development, appropriate IL policy formulation and effective pedagogical interventions.

1.3 Research Objectives

The main objective of this study was to establish the information literacy learning experiences of fourth-year psychology students in Kenyan universities. The study addressed three specific objectives:

1) To determine the IL programmes offered in Kenyan universities
2) To investigate IL competencies acquired by fourth-year psychology students at Kenyan universities
3) To reveal the perceptions of students towards information literacy in Kenyan universities

1.4 Research Questions

The key question this study sought to address was: What are the information literacy learning experiences of fourth-year psychology students in selected Kenyan universities?

The following specific research questions were investigated:

1. What information literacy learning experiences do the fourth-year psychology students possess?
2. What are the goals of the information literacy programme at the Kenyan universities?
3. What pedagogical approaches are used to deliver information literacy to psychology students?
4. What is the role of ICT in promoting the learning of information literacy?
5. What are the perceptions of fourth-year psychology students towards information literacy?

6. What are the challenges experienced by fourth-year psychology students in learning information literacy?

1.5 Significance and Justification of the Study

There are various reasons why this study is considered of practical importance from policy and theoretical perspectives. Lupton (2008:400) advises that ñIL should be investigated as a learning activity situated within a topic, course and disciplineò, since IL is experienced within a particular context. Finally, most related literature seems to concentrate on learning experiences of students in their first year of study in the universities and there are limited empirical studies covering the experiences of those who are in the final year of their undergraduate degree programmes. Besides, IL and critical thinking are inseparable. An IL student must be able to critically analyze information and be confident in using it, which are key attributes in the practice of psychology. The field of psychology has a more elaborate development of the pursuit of transforming information to knowledge (Marcum, 2002:4). Specific reasons for selection of the target group for this study included:

1) This would provide a more practical way of integrating IL into the curriculum and also assist in developing more effective pedagogic approaches since IL is well established in psychology disciplines
2) The fourth year students are about to exit into the labour market and the IL skills they have obtained would provide a better indicator of the extent to which the IL curriculum they pursued in relevant
3) IL is lifelong learning experience, and fourth year level may provide an indication of the extent to which these students since their entry into the degree programme have learned and become proficient in IL skills and competencies This makes psychology the choice programme to investigate student IL learning.

The outcomes of this study may provide the basis for guiding government efforts in the formulation of a national information literacy policy framework to help propel the country into an information society, in line with vision 2030.

1.6 Delimitations of the Study

Delimitation of a study helps to narrow the scope of a study to specific subjects or sites. It also helps in identifying potential weaknesses of a study (Creswell 2003:148). The present study investigated information literacy learning experiences of fourth-year psychology students in four selected Kenyan universities. The selection of the four universities was based on their accessibility. The two broad categories of universities in Kenya are private and public universities. In this regard, two private and two public universities were selected. The four universities were selected because they were the first to be chartered and have well-established psychology undergraduate programmes.

1.7 Assumptions of the Study

This study is based on the assumptions that 1) information literacy (IL) enhances learning experiences of students at universities (Julien & Boon, 2004) by helping them construct their interaction with the facilitators of the learning process, content and pedagogy, 2) Psychology students in their fourth year have acquired adequate IL competencies, 3) information literacy enhances academic achievements and 4) information communication technologies (ICTs) greatly impact information literacy learning experiences of students.

1.8 Preliminary Literature

Several empirical and theoretical studies have been conducted internationally on information literacy and learning experiences in university settings. Maybee (2005:81) studied undergraduate perceptions of IL in the California Polytechnic State University and found students perceived information use as finding information from their sources, initiating a process and building a personal knowledge base for various purposes. Maybee concluded that there was need for more focus on developing a user-centred IL pedagogy and curriculum to facilitate changes in student learning perception, which was found to be complex and multi-tiered. Badke (2009) observed that distinct educational initiatives for IL, media literacy and information and communication technologies should be combined into a single uniliteracy effort, in order to have greater potential to effect curricular change.

Vaiciuniene and Gedviliene (2008), from a constructivist perspective, examined the impact of ICT on studentsô IL learning experiences in Lithuania. The study found that a virtual learning environment was integrated with traditional learning. The study further found that the nature of

a learning environment greatly affected studentsô attitudes towards learning and ICTs played a key role in shaping attitudes. Similarly, Edwards (2005) studied information searching experiences concerning how a student may plan, reflect and perform the search. The results showed that students with inadequate IT confidence ranked low in their information searching experiences on the Web. In contrast, social communication and interaction was found by Vaiciuniene and Gedviliene (2008) to enhance learning and critical thinking.

Approaches to curriculum development and construction of learning environments have been used to understand student learning experiences. Ertl *et al*. (2008), in their review of studies on student experiences of IL in the UK, found that approaches to teaching, curriculum development, and the construction of learning environments, impacted on the attitude of students to information literacy. The study found that social strategies, such as group work, peer learning, problem-based learning and use of ICT, enhanced the studentsô learning experience. The study concluded that resources tailored to create flexible and broad-based support to students are needed.

In Australia, Bruce (1997) investigated IL experiences in higher education, using a relational approach and advanced a theory based on four features: first, learning is about changes in conception; second, learning always has content and a process; third, learning is about relations between the learner and subject matter; and, finally, improving learning is about understanding studentsô perspectives. A relational approach to student learning recognizes that knowledge acquisition is not always accompanied by changes in understanding of the phenomena studied. This supports Luptonôs study (2008), which found that course context significantly influenced the experience of learning IL.

Within Africa, the IL scene is marked mostly by studies from Western and Southern Africa, with a few from East Africa. Baro and Zuokemefa (2011) surveyed 36 Nigerian universities and found that they all provided a form of IL training, ranging from library tours to use of the library and information resources such as databases, but lacked a framework as a point of reference. In a study of IL in Ghanaian universities, Dadzie (2009) found IL teaching had three approaches, namely library literacy, computer and media literacy and communication skills literacy. The study observed that IL needs to be firmly institutionalized in the curriculum and

concerted efforts from various stakeholders were needed to enhance the IL environment. Dadzie (2009:174) added that an effective IL programme equips students with relevant skills needed for their studies, daily life and for the workplace

Chipetta, Jacobs and Mostert (2008), in a study at the University of Zululand, the Durban University of Technology in KwaZulu-Natal in South Africa and Mzuzu University in Malawi, found students who attended formal IL training were able to locate and retrieve information sources easily, compared to those who had not. The study outlined challenges in the delivery of IL that included lack of time, computer illiteracy, lack of computers and lack of collaboration between librarians and lecturers. In East Africa, Lwehabura (2007) found IL delivery in Tanzanian universities included lectures, hands-on practice and use of the web. The study revealed that, despite an understanding of the importance of information literacy among the librarians and lecturers, inadequate staffing, lack of IL policy and lack of adequate facilities were the major challenges. Moreover, evaluation and assessment of IL instruction was found weak, thus affecting the studentsô IL experience. Lwehabura discovered that IL initiatives in Tanzania, as in other parts of Africa, were unco-ordinated and disorganized. The study concluded that mainstreaming IL in university curriculum enhanced learning.

Kavulya (2003), in a study of the obstacles facing information literacy in Kenyan universities, found lack of finance and human resources, absence of information literacy policy, computer illiteracy among librarians and lack of ICT infrastructure were factors that greatly impeded IL learning. The study further revealed that IL initiatives were limited to library orientation, which did not give students enough time to understand the lectures. Kingôori *et al*. (2012), in their study of IL in Kenyan universities, found lack of a policy framework for IL as the main impediment to IL growth in the country. Their study further revealed that time and interest from users, poor teaching methods, lack of administration support and lack of systematic approach by librarians were among other key impediments to IL learning among freshmen in universities.

A look at the literature reviewed suggests a limited collection of empirical studies on IL in universities in the context of Africa, in general, and Kenya, in particular. Whereas there is a growing advocacy for information literacy in higher education, there seems to be little effort to

understand studentsô experiences. Attention seems focused on instructors, methods of instruction, content, infrastructure and assessment of the programme. The present study endeavoured to understand the experiences of students who go through IL programmes, whether for-credit or not. Finally, the reviewed studies on IL seem to concentrate on students in their first year in universities and there are limited empirical studies on those leaving universities and entering the labour market. The present study makes a contribution towards attempting to bridge these gaps.

This section presented the context of literature (empirical and theoretical) that is more elaborately discussed in Chapter Three

1.9 Theory

The specific theories and models for studying information literacy are founded on constructivism. They include the Big 6; Information Seeking Process (ISP); Seven Pillars of Information Literacy; Focus, Links, Input and Payoff ï Intelligent Thinking (FLIP IT) and Seven Faces of Information Literacy.

The Big 6 model was conceptualized by Eisenberg and Berkowitz in 1988 in studying IL, especially in schools in the US (Eisenberg and Berkowitz, 1990). The model is significant to this study because of its flexibility and application (Kingori *et al.*, 2012). Similarly, Kuhlthau (1991) developed the Information Seeking Process (ISP) model for use in Library and Information Science (LIS) research (Shannon, 2002:19). The ISP model demonstrates how users approach the research process and build confidence. The model has six stages and posits that learning occurs through active construction of knowledge, rather than by transmission of facts from teacher to student (Shannon, 2002:1). Kuhlthau *et al.* (2008:10) found the model a useful research tool for students in designing and analyzing their investigation of information seeking behaviour.

The FLIP IT model on the other hand was developed by Alice Yucht. It presents a four-stage, nonlinear information literacy research process (Yucht, 1999). The model allows flexibility at each stage where the learner needs to refocus back to the original question and it also links to the next step; and uses a problem-solving approach, where students build on what they have

learnt at each preceding stage (McCarthy, 2003). McCarthy identifies some constructs of the model that work well in developing collaborative activities that enhance the acquisition of information literacy and critical thinking skills acquisition by students. These constructs include: Focus ï deals with establishing the exact need for information; Links- deals with what you need to locate appropriate resources for the information you need, and Payoff ï deals with the practical application of the information found.

The Standing Conference of National and University Libraries (SCONUL) developed the Seven Pillars of Information Literacy model. The modelôs constructs include: identifying a personal information need; assessing current knowledge; constructing strategies for locating information; locating and accessing information; reviewing the research process; comparing and evaluating information; organising information; applying the knowledge gained and disseminating information in a variety of ways (SCONUL, 2011).

Turning from general models used to investigate IL, this study was specifically underpinned by Bruceôs Seven Faces of Information Literacy (Bruce 1997; 2003) model. Bruce identified seven different ways (faces) of experiencing information literacy. These are:

1. *Information technology conception,* which sees information literacy as using technology for information retrieval and communication;
2. *Information sources conception,* that concerns itself with finding information located in the various information sources;
3. *Information process conception,* effectively dealing with new situations based on knowledge of finding and using necessary information;
4. *Information control conception,* using various media to collect, store and manipulate information when necessary;
5. *Knowledge construction conception*, building a personal knowledge base in a new area of interest by critical analysis and evaluation of information;
6. *Knowledge extension,* working with knowledge and personal perspectives that lead to gaining new insights; and
7. *Wisdom conception, which* perceives information literacy as a wise way of using information for the benefit of others.

Using this model the researcher was able to conceptualize psychology studentsô IL learning experiences in Kenyan universities. This study seeks to investigate psychology studentsô experience of studying IL. All the seven conceptions fronted by Bruceôs model address most areas that concern studentsô learning processes including how they use ICT to retrieve and communicate information, how to locate information in the different sources, how to manage information and avail it when it is needed for use, how information is used to generate insights that enhance knowledge and using information wisely in order to benefit others. In Table 1.1, the research questions are mapped onto the constructs of the Bruce model.

Table 1.1: Mapping Research Questions to Seven Faces of Information Literacy Constructs

Research Question	**Theoretical Framework Attributes**
1. What information literacy learning experiences do the fourth-year psychology students possess?	Information sources, information control, knowledge construction, knowledge extension
2. What are the goals of the information literacy programme at the Kenyan universities?	Information process, knowledge construction, knowledge extension
3. What pedagogical approaches are used to deliver information literacy to psychology students?	knowledge extension, information technology
4. What is the role of ICT in delivering information literacy?	Information technology
5. What are the perceptions of fourth-year psychology students towards information literacy?	Knowledge construction, knowledge extension
6. What are the challenges experienced by fourth-year psychology students in learning information literacy?	Information technology, information process, information sources, information control, knowledge construction

The detailed discussion of the theoretical frame work and its attributes is given in Chapter Two.

1.10 Methods

This study adopted the pragmatist paradigm. The pragmatic paradigm emphasizes the research problem and allows researchers to use available methods that enable them to address the problem (Creswell, 2009:10). Creswell notes that pragmatism is not fixed on any system of philosophy and reality. Badley (2003:300) observes that pragmatists view all forms of inquiry as ways of helping us cope with aspects of our world, with no one approach to research being superior to the other. Pragmatism does not view truth as absolute, but provisional, and focuses on the *how* to research in order to meet the intended purpose, with research outcomes being possible connections between actions and consequences (Badley, 2003:307).

By adopting the pragmatist paradigm, this study applied both qualitative and quantitative methodologies, since the choice of methodology depends on the approach that best addresses the research questions (Creswell, 2009:10-11). Qualitative methodology captured the participantsô accounts of meaning, perception or phenomenological experiences (De Vos *et al.*, 2011:65, Babbie & Mouton, 2001:53). The quantitative methodology acquired statistical and numeric data describing respondentsô characteristics, attitudes and opinions as collected by the questionnaire. Case study research design was employed to investigate students IL learning experiences at the four selected universities in Kenya. Case studies are described as best suited for in-depth investigation of phenomena (Simons, 2009:23; De Vos *et al*., 2011). Since the participants in this study are a discrete group (namely fourth-year psychology students), a case study design was found appropriate.

The sources of information for this study were public and private universities that offered psychology degree programmes. At the time of the study, Kenya had eight universities offering psychology, from which four were purposively selected for reasons that have already been stated. A total of 162 fourth-year psychology students from the four universities formed the student population. The fourth-year psychology programme registration lists were used as the sampling frames. The number of lecturers in psychology from the four universities was 56. A total of 49 librarians from the four universities was also part of the population. Student samples for each university were determined using Krejcie and Morganôs (1970) sample size table. Simple random sampling was used to select the sample of student respondents, while purposive sampling was used to select librarians and psychology lecturers from each university, guided by

their relevance to the study, as being the primary people in direct contact with the students.

Multiple data collection methods were employed for this study. A semi-structured questionnaire was used to gather qualitative and quantitative data from students, lecturers and librarians (De Vos *et al*., 2011:351). Additionally, a documentary review of the course syllabi and other documents was undertaken.

Qualitative data was analysed through descriptive/interpretive techniques that included content analysis. Quantitative data from the questionnaires sought to measure attitudes and perceptions of students and was analysed using the Statistical Package for Social Sciences (SPSS). The mapping of research questions to data sources and analysis techniques is presented in Table 1.2.

Table 1.2: Mapping of research questions to data sources and analysis approach

Research question	**Sources of Data**	**Data analysis approach**
1. What information literacy learning experiences do the fourth-year psychology students possess?	Face-to-face Interview Document review Questionnaire	Content analysis Factor analysis using SPSS
2. What are the goals of the information literacy programme at the Kenyan universities?	Face-to-face Interview Document review	Content analysis
3. What pedagogical approaches are used to deliver information literacy to psychology students?	Document review Face-to-face Interview	Content analysis
4. What is the role of ICT in delivering information literacy?	Questionnaire Face-to-face Interview	Content analysis SPSS
5. What are the perceptions of fourth-year psychology students towards information literacy?	Questionnaire Face-to-face Interview	Content analysis Factor analysis using SPSS
6. What are the challenges experienced by fourth-year psychology students in learning information literacy?	Questionnaire Face-to-face Interview	Content analysis SPSS

A detailed discussion of the methods is provided in Chapter Four.

1.10.1 Reliability and Validity

Reliability in a study refers to the ability of a particular technique to yield the same results each time if applied repeatedly (Babbie, 2007:143; Rubin & Babbie, 2008:180). Reliability of the instruments in this study was achieved by re-testing the instruments in order to minimize errors in their construction (Babbie & Mouton 2001:244). Pre-test results were subjected to Cronbachôs Alpha coefficient measurement and calculated using SPSS to test for internal consistency. Cronbach's Alpha was 0.843, well above the threshold of 0.67 recommended by Mugenda and Mugenda (2003) and 0.72 by Yin (2013). Section 4.9 in Chapter Four gives a detailed discussion of reliability tests for instruments in this study

Validity is described as the extent to which results from data analysed in a study accurately represent the concept under consideration (Mugenda and Mugenda, 2003: 99; Babbie, 2007:146). In this study validity was ensured through methodological triangulation for collection and analysis of data. The use of qualitative and quantitative approaches ensured that the appropriate data required for the study were collected. Questionnaires and interview guides were carefully developed and pre-tested to ensure they were clear and easily understood. Validity was further achieved by ensuring careful sampling, using multiple sampling strategies that included purposive sampling for lecturers and librarians and simple random sampling for the student respondents (Tedlie & Tashakkori, 2009:178-178).

1.10.2 Ethical Considerations

Ethical considerations in the research process require observing ethical standards in the planning of the study, methods of data collection and analysis, and use of the results (Mugenda, 2008:293-294; Teddlie & Tashakkori, 2009:199). Ethical issues include the participantsô confidentiality, risks and benefits, purpose of the research, anonymity, privacy, voluntary participation and getting consent to participate (Rubin & Babbie, 2008: 70-80; Mugenda, 2008:293-309).

This study assured and upheld anonymity of the respondents and confidentiality of the information given. All participants voluntarily signed written informed consent forms as a show of acceptance to participate in the study (see Appendix IX). Furthermore, ethical clearance for data collection was given by the Research Ethics Committee of the University of

Kwa Zulu-Natal (see Appendix XIV). A research permit from Kenya National Council for Science and Technology was granted, which allowed the study to be carried out in the four universities in Kenya (see Appendix IV). Finally, permission to do research was sought and granted by academic administrators in the four universities (see Appendices I-III). All respondents in this study were clearly briefed on the objectives, purpose and expected outputs of the study. They were free to withdraw at any stage of the study if they so wished.

1.11 Structure of the Thesis

Several authors have discussed structuring of theses, including Neuman (2006:473) and Patton (2002:33-35). However, although these authors present a structure consisting of five chapters, all basic elements of a thesis are included, namely: introduction, literature review, theoretical/conceptual framework(s), research methodology and presentation and discussion of findings. This thesis is organised in seven chapters, in accordance with the guidelines of writing PhD theses of the University of KwaZulu-Natal College of Humanities. Below is a detailed elaboration of the chapters.

Chapter One: Introduction

This chapter provides the background to the research problem, describes the statement of the problem, outlines research questions and delimitation of the study and discusses the significance of the study. It briefly describes the theory underpinning the study and preliminary literature, research methods applied, reliability and validity measures taken, and ethical considerations.

Chapter Two: Theoretical Framework

This chapter presents the main theories, models and frameworks for studying IL, such as the Big 6, Information Seeking Process (ISP), Seven Pillars of Information Literacy, Focus, Links, Input and Payoff ï Intelligent Thinking (FLIP IT) and discusses in detail the Seven Faces of Information Literacy as the main model that guided this study.

Chapter Three: Literature Review

This chapter provides an analytical presentation of empirical and theoretical literature on

information literacy organised geographically, internationally, regionally and locally. The gaps in the literature are identified and explanation provided of how the current study attempts to address some of the gaps.

Chapter Four: Research Methodology

This chapter describes research paradigms, research approach, research design, population, sampling procedure, data collection procedure, data analysis, validity and reliability of instruments and ethical considerations.

Chapter Five: Research Findings

This chapter presents the findings of the study. It describes the results as they relate to the research objectives and research questions. Both descriptive and inferential statistics are used to present the results.

Chapter Six: Discussion of Findings

This chapter provides a discussion of findings and their interpretation to attach meaning to the results. The discussion draws largely on extant literature and theory.

Chapter Seven: Summary, Conclusions and Recommendations

The final chapter presents a summary of the dissertation in the light of the literature reviewed, findings of the study, originality and contribution made by the study to the existing body of knowledge. It discusses recommendations based on the conclusions and suggests areas for further research.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1 Introduction

Chapter Two discusses in detail the main information literacy model and other complementary models that underpinned this study. Conceptually, this study draws on the various information literacy models and the essential constructs of each of the models are briefly discussed below. Empirical and theoretical literature significant to these models is discussed and the relevance and limitations are outlined. Studies that have applied the models are also discussed.

Models provide a logical explanation of interrelated concepts that enable a simplified view of reality, by helping visualize phenomena. A theory unveils what causes a phenomenon to operate the way it does (Johnson & Christensen, 2008:80). According to Easterby-Smith, Thorpe and Lowe (2002:11) a researcher at the doctoral level is expected to contribute to theoretical foundations by investigating a practical problem by using different lenses. The specific theories and models for studying information literacy are founded on constructivism. Constructivists view the world as a social construct of society where reality depends on an individualôs thinking (Sheppard, 2004). According to Blaik-Hourani (2011:231), constructivism seeks to refine students' knowledge, develop inquiry and analytical skills through critical thinking and lead to studentsô ability to develop opinions about the world around them. According to this assumption, reality is subjective individualsô thinking.

John Dewey and George H. Mead reviewed the mental activity of human action in relation to problem solving. They postulated that when individuals experience a problem in an activity, they consider different lines of action and try to ponder and direct their own activity with the help of thinking to solve the problem (Sutinen, 2007:2). In so doing, the individuals construct various alternatives to the activity through their own thinking. Furthermore, Kuhlthau (1997:710) explains that, ñwhen learning is viewed as a process of construction, each student is actively involved in building on what he or she already knows to come to a new understanding of the subject under study.ò

This study sought to explore the information literacy learning experiences of fourth-year psychology students in Kenyan universities. The study sought to address the following research questions:

1. What information literacy learning experiences do the fourth-year psychology students possess?
2. What are the goals of the information literacy programme at the Kenyan universities?
3. What pedagogical approaches are used to deliver information literacy to psychology students?
4. What is the role of ICT in promoting the learning of information literacy?
5. What are the perceptions of fourth-year psychology students towards information literacy?
6. What are the challenges experienced by fourth-year psychology students in learning information literacy?

2.2. Overview of Related Theoretical Models

Several theoretical models have been developed on information literacy over the years. The specific IL theories and models discussed in this chapter include the Big 6 (Eisenberg & Berkowitz, 1990); Seven Pillars of Information Literacy (SCONUL, 1999); Information Seeking Process (ISP) (Kuhlthau, 1985); Focus, Links, Input and Payoff ï Intelligent Thinking (FLIP IT) **(**Yucht, 1999**),** Seven Faces of Information Literacy **(**Bruce, 1997) and Sauce (Bond, 2001). The theoretical model that underpinned this study is The Seven Faces of Information Literacy.

2.2.1 The Big 6 Information Skills Model (Eisenberg & Berkowitz, 1988)

The Big 6 model was conceptualized by Michael B. Eisenberg and Robert E. Berkowitz in 1988, as a process model for information problem-solving (Eisenberg & Berkowitz, 2009) applicable to different situations (Eisenberg, 2005a; Story-Huffman, 2006; Wolf, 2003) and not necessarily to school settings. Information problem-solving is a concept that combines the skills needed to access and use information to solve an information problem (American Association of School Librarians, 1998; Eisenberg and Berkowitz, 1990). Wopereis, Brand-Gruwel and Vermetten (2008), building on the Big 6 model, developed an information

problem-solving model in which they observed that solving information problems is a complex cognitive skill.

The Big 6 model consists of six separate steps that help students focus their research, solve problems and make decisions (Eisenberg & Berkowitz, 1990). These steps include task definition, information seeking strategies, location and access, use of information, synthesis and evaluation (Eisenberg & Berkowitz, 1996:24-25). Through the six steps, this model seeks to develop skills and abilities in students that enhance effective information problem-solving by way of creating a mental picture that helps a beginner construct a method to meet the information task at hand. The model helps students visualize the series of tasks that at first are not understood or seemingly unconnected to enable them to accomplish what would otherwise seem insurmountable. The six steps are presented in Figure 2.1.

Figure 2.1: Big 6 Model (Source: Eisenberg & Berkowitz, 1988)

The first step in the Big 6 model is task definition, which seeks to define the information problem and identifies the information needed in order to complete a given task. The task definition stage includes helping the students to understand the nature or type of assignment given; narrowing the scope to determine exactly what is required, what a successful end result will look like and the type and amount of information that will be needed. Eisenberg (2005a) observes that a clear task definition is realized through direct instruction with practical quizzes

that give the students enough practice in understanding any information problem. Jansen (2005a:34) found good task definition a multi-step process that is key to a successful information search.

In the information seeking strategies stage, the model seeks to enable students to determine the range of possible sources and evaluate the different possible sources to determine priorities. Eisenberg (2005b:34) refers to it as a ómind expanding stageô of the information problem-solving process. This stage encourages creative thinking that goes beyond the immediate topic. It involves not only selecting the best possible sources of information to complete a given task, but also reasons why the selected sources are considered best. Brainstorming enhances an understanding of the range of possible information sources and may include generating a list of all potential sources of information, in all formats, with regard to an information problem or recognizing the various technology sources available. Evaluation at this stage involves choosing the best possible information source for a particular information problem from the range of sources selected under brainstorming. Choosing the best possible sources of information ensures that reliable and accurate information is selected to meet the task defined in stage one.

The third step involves locating and accessing the information resources. This stage includes ways of getting to the selected sources and using the information in each source efficiently and effectively. Finding where sources of information are located is as important as finding the information in the sources. At this stage, students are taught how to use indexes, both print and digital, online catalog and Web searches (Jansen, 2005b:29-30; Darrow, 2005a:28). The process involves generating keywords and related words from their questions, including other words that might be useful for their search, but not in their initial questions. Skimming and scanning are important skills that are learnt at this stage for efficient access to information within sources. The student must be finally able to save or print searches and documents found, or physically locate and check out needed print or electronic sources from the library or information centre.

The fourth stage moves from selecting and accessing sources to using information in the sources. Students critically analyse information in each source and determine what is relevant

to the problem at hand and how to extract it. A clear understanding and grasp of the task, including the research questions, is critical at this stage. Students at this level must engage the sources of information by reading, or careful listening, viewing or touching the information in the source. Students require note-taking skills to record the relevant information gathered efficiently (Eisenberg, 2005b:30). According to Jansen (2003; 2005c:31), note-taking consists of three steps: identification of keywords and related words in the searchable questions, skimming and scanning and extracting needed information. These three steps are not mutually exclusive and take place concurrently. Identification of key words and synonyms involves reading though the document and highlighting words that explain what the topic is about. It could include use of a thesaurus to find synonyms. Skimming and scanning involves going through the document several times to have the general idea it conveys, while extracting involves use of note-taking cards or computer software to record single ideas from identified key words during skimming and scanning. Use of computers to extract information from electronic sources has made the process easier and more efficient, although the quality of the notes taken depends greatly on the individual student. Computer software includes word processors like MS Word and presentation software like PowerPoint. Full citations for the sources extracted are carefully recorded at this step.

Synthesis is the fifth stage in the Big 6 information problem-solving process. Despite being the end result or outcome of the process, this stage does not always involve a report, paper or project, but depends on the original task or problem-solving situation (Darrow, 2005b; Eisenberg, 2005d). Individual synthesis includes reports, term papers, personal decisions and communicating in person, while the societal level includes the mass media and the internet. In the Big 6 model, synthesis consists of two aspects: organizing information and presenting information. According to Wurman (1989), information can be organized in five ways: alphabetically, by categories, as a continuum, by location and by time. Software exists that assists with the presentation of information, including word processors, desktop publishers, electronic spreadsheets, databases and presentation software. Jensen (2005d:27) noted that the process of organization and presentation of information results in transferable high-level thinking skills developed in students. The skills include writing, technology, presentation, production and performance. Information must be organized and presented, bearing in mind the issues outlined in the first stage, namely task definition.

The sixth and final stage in the Big 6 model is evaluation. According to Eisenberg (2005d:22-23), the Big 6 approach perceives information problem-solving as not being a linear process. Students often move from one step to another while working on an assignment. Evaluation can be either at the end of the assignment (summative evaluation) or during the process of problem-solving (formative evaluation). It can also include judging the effectiveness of the product in meeting the goal of the process and the efficiency of the process in terms of how well it flowed. In efficiency the students are able to identify their strengths and weaknesses at any given step, leading to confidence and pride as they perceive being in control of the process (Jansen, 2005e:24).

The University of Denver, The Kentucky virtual library and the University of Washington are among institutions of higher learning that have applied the Big 6 model as a basis for information literacy tutorials in their institutions. The Big 6 model is used in curricula across disciplines to instil problem-solving and knowledge-learning skills, thereby developing information literacy competencies among the students. According to Eisenberg (2013), this model has proved to be successful in educational institutions worldwide. Moreover, Kingôori *et al.* (2012) found the Big 6 model as offering essential life skills that are applicable and transferable to many disciplines and at various levels, including undergraduate students, despite the fact that it was originally designed for elementary school students. However, the Big 6 was not adopted as the underpinning model for this study because of its focus on problem-solving aspects of information use.

2.2.2 Seven Pillars of Information Literacy Model (SCONUL, 1999)

The Standing Conference of National and University Libraries (SCONUL) developed the IL model in 1999 referred to as the Seven Pillars of Information Skills (SCONUL, 1999). The Seven Pillars of the model include: the ability to identify a personal need for information (Identify); the ability to assess current knowledge and identify gaps (Scope); the ability to construct strategies for locating information and data (Plan); the ability to locate and access information and data needed (Gather); the ability to review the research process and compare and evaluate information and data (Evaluate); the ability to organise information professionally and ethically (Manage); and the ability to apply the knowledge gained (Apply), by synthesising

new and old information and data to create new knowledge and disseminating it in a variety of ways (SCONUL, 2011).

The model, revised in 2011, aims at defining information literacy skills and has been adopted by librarians and teachers the world over as a guide for training learners in information skills in higher education (Bent & Stubbings, 2011). While maintaining the basic principles of the original (1999) model, the revised model incorporates new terminologies and new understandings of what the IL concept means. To relate well with various groups of people at their levels, the revised model presents a core model, describes a set of generic skills and understandings expected at each of the seven pillars for anyone to become information literate, then offers a series of ñlensesò through which different learners can apply it.

The Seven Pillars are conceived as a three-dimensional circle, demonstrating that becoming information literate is not a linear process, but rather cyclical or interactive (SCONUL, 2011; Welsh Information Literacy Project, 2011). According to SCONUL (2011), the individualôs aptitude, background and experiences affect how they respond to an information literacy development; and that within each ôPillarô an individual can progress up or move down. The more information literate a person becomes the more attributes in a given Pillar are demonstrated, as shown in Figure 2.2.

Figure 2.2: Seven Pillars of Information Literacy (Source: SCONUL, 2011)

SCONUL (2011) notes that a person can grow in more than one attribute represented by the pillars at the same time. Each pillar represents specific skill levels, attributes and understandings that serve as benchmarks for an information literate person. The more a person demonstrates the IL attributes in more pillars the more information literate the person is. The core model describes generic skills and understandings, but different user groups would each have unique skill descriptions that reflect expectations of the group that they represent. According to Webber (2008), individual attributes could be expanded to apply to specific situations for students and workers as well.

The first Pillar presumes knowledge of oneôs information need and recognizes the ability to analyse the need as a critical first steps towards becoming information literate. This Pillar stands for developing a learning habit, making one a constant seeker of new information and one who understands the various forms of information on a global scale. It includes brainstorming of the information already known. Webber (2008) found this stage challenging, with students unable to identify the gap between what they know and what they need to know to accomplish an assignment; and a worker in a business setting who is unable to see an information need by him/herself. Mastery of the second pillar involves knowledge of available resources in different formats that would best address the task at hand and how best to use them to meet the identified information need in the preceding step.

SCONUL (2011) describes the third Pillar as where the information seeker demonstrates the ability to identify where specific information may be found in the various sources identified in the second Pillar. This includes understanding how different information sources work and identifying key words and framing simple questions to assist in obtaining the needed information. The fourth Pillar involves skills for accessing the information found in the various formats, including the ability to construct effective search strategies and use questions formulated in Pillar three. The information gathered in the fourth Pillar is evaluated against the information need identified in the first Pillar. The gathered information is organized for ease of retrieval and communication in the sixth Pillar. Webber (2008) observed that this involves ability to organize and apply information appropriately. It includes understanding ethical and legal aspects of information use and applying the information in different situations and for different purposes. In the seventh Pillar, information found is recorded, analyzed and used to

address the original problem or issue and may create a basis for new knowledge. In this Pillar the information gathered is effectively communicated verbally or in writing.

The Welsh Information Literacy Project (2011) adopted the Seven Pillars in developing their IL framework, where IL learning objectives at each educational level were easily aligned with the attributes of the SCONUL framework because of its sequential continuum. A study into the use of the seven pillars model by SCONUL institutions carried out in 2008-2009 found over 77% of those sampled used the Seven Pillars model for a variety of purposes and in different contexts (Gallacher, 2009:5). The basis for IL programme design was the leading use of the SCONUL model, followed by the modelôs use in strategy or policy documents. Other uses and contexts included providing the basis for library IL frameworks, evaluating learning outcomes and providing framework for online IL modules.

McKinney, Jones and Turkington (2011) applied the seven pillars model in their discussion of the findings in their study of information literacy competence through inquiry with first-year psychology students at the University of Sheffield. The seven pillars were used as lenses that enabled evaluation of the studentsô IL level of competence, where the study established that students preferred Google Scholar over Web of Knowledge as their preferred source of information.

2.2.3 Information Seeking Process Model (Kuhlthau, 1985)

Another model that is used in IL research is Kuhlthauôs Information Seeking Process (ISP), first published in 1985 and greatly enriched over time (Kuhlthau, 1985; 1991; Shannon, 2002). The model adopts a holistic approach to information-seeking by incorporating the information seekerôs cognitive (thoughts), affective (feelings) and physical (actions) experiences at different stages of the process. The cognitive aspect of this model connects the studentsô thoughts and behaviours to their understanding of information literacy. Consequently, how students experience IL learning is central to their perception and information processing.

According to Shannon (2002:19), the ISP model is commonly used in LIS research and, like the Big 6, ISP was initially developed specifically for up to grade 12 school level students, but has since been applicable in higher education. The model was developed to investigate why

students behaved the way they did while looking for information. Central to the ISP model is the notion that uncertainty, both affective and cognitive, increases and decreases in the process of information-seeking. Kuhlthauôs (1991; 1999) empirical studies show that ISP occurs in six stages, outlined below:

1. **Task initiation** - stage where a person realizes that they lack information that is needed to complete an information task or solve a problem. Uncertainty starts at this stage until a topic is selected.
2. **Selection** - stage where a general topic or problem is identified, making the uncertainty at the initiation stage change to optimism. It leads to wanting to begin searching for the information needed.
3. **Exploration** ï the stage that involves gathering information that is not consistent or compatible, leading to a state of confusion, uncertainty and doubt. This stage investigates the information with the aim of finding focus.
4. **Formulation-** the stage where a clear perspective is formed, reducing uncertainty and increasing confidence. Here the focus is formulated from the information found.
5. **Collection** ï this stage involves gathering critical information that relates to the problem, creating more interest in the process. The information being gathered at this stage defines and supports the previously identified focus. The researcher is encouraged to be part of the search for the solution to the problem.
6. **Presentation** - stage when the search is complete and the information found brings a new understanding and the seeker is able to explain the new understanding to others. It involves applying the learnt perception.

The six stages move an information seeker from the initial state of recognizing the information need, to meeting the need. In the first two steps, Kuhlthau (1988; 1991; 1993) sees the information-seeker brainstorming, using the reference collection in the library and discussing the information task with peers and teachers. The selection of the topic in step two brings relief that finally there is a general understanding of the topic and this diminishes anxiety levels. In stage three and four the information seekers move through a period of uncertainty and confusion, as they struggle to grasp the exact information needed. Activities at these stages

include identifying the likely sources of information, leading to feelings of optimism when they finally settle on a particular source or sources.

Identifying the sources gives the information-seekers a feeling of confidence to complete the task at hand. In stages five and six, the information seekersô confidence increases, as well as their interest in the topic leading to further searches and gathering of relevant information to meet the task. This may involve reconstructing the topic based on the information being gathered, since there is a clear sense of the particular information needed. These stages involve detailed note-taking, with bibliographic references being recorded. As the search seems not to produce new information, the search process comes to a conclusion and the information seekers move to present the result that meets the information need. Kuhlthau further identified likely thoughts, feelings and actions that may accompany each task at the various stages. This movement is facilitated by the complex choices that are made in the three main realms of activity: cognitive, affective and physical (Kuhlthau, 1991:362), as depicted in Figure 2.3.

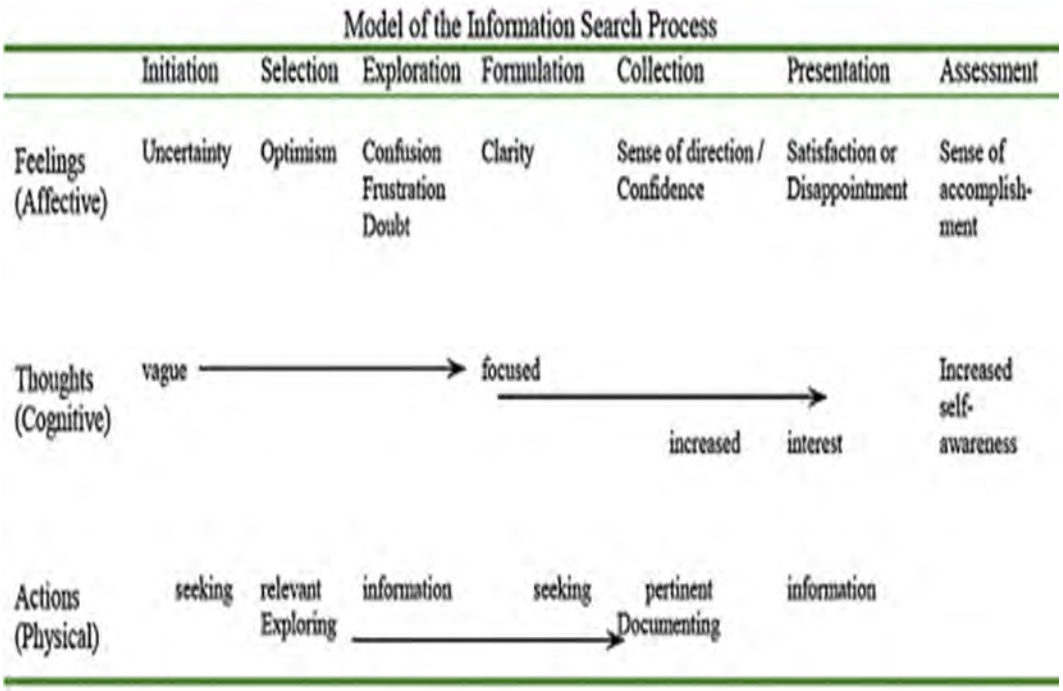

Figure 2.3: Six Stages of Information Seeking Process (ISP) (Source: Kuhlthau, Heinstrom & Todd, 2008)

In the several empirical studies following the publication of the model, Kuhlthau (1991; 1993; 1997; 2001; 2008) found that as information-seeking tasks became more complex so was the increase in the feelings of uncertainty, leading to confusion and apprehension. This, however, diminished as studentsô thoughts became more focused, resulting in more confidence and sense of direction in later stages. The information-seekers become more competent at developing more specific searches and more critical at the information found, because they are more informed on the topic or problem at hand.

Although Kuhlthau initially developed the ISP model by interviewing high school seniors as they completed term papers, the ISP model has greatly contributed to the understanding of factors affecting the information-seeking process and has formed the basis of several studies on information-seeking behaviour (Bryon & Young, 2000; Kuhlthau, 2001; Kracker, 2002, Kracker & Wang, 2002; Shannon, 2002; Hyldegard, 2006 and Kuhlthau, 1999; 2008). As a conceptual framework in LIS studies, the ISP model is a result of more than two decades of testing and empirical research. For example, in a study of the applicability of the ISP model in a virtual learning environment, Bryon and Young (2000) found students given an information-seeking task exhibited the stages outlined in the model which supports the study of Kuhlthau, Heinstrom and Todd (2008), that found the ISP model a useful explanation of information-seeking behaviour in the midst of many changes in the information environment. This confirms the independence of the model from the physical library and classroom environment that it was originally developed in.

According to Kuhlthau, Heinstrom and Todd (2008), the model goes beyond being a valuable theoretical framework for examining information behaviour only, to serving as an important tool for intervention in different information-seeking contexts. Kuhlthauôs studies have been embraced outside the learning environments, to include workplace and other public contexts (Kuhlthau, 1997, 1999, 2001).The information-seeking and use attributes of Kuhlthauôs model complemented the main model for this study.

2.2.4 Focus, Links, Input and Payoff–Intelligent Thinking (FLIP IT) Model (Yucht, 1999)

In 1988, Alice Yucht developed the Focus, Links, Input and Payoff ï Intelligent Thinking (FLIP IT) model as a four-stage information literacy research process. Rather than insisting on a lock-step approach to research, the FLIP IT model allows critical thinking and flexibility at each stage (McCarthy, 2003). The problem-solver is free to move backwards and forwards during the researching process. Over the years of development and use the four letters-FLIP have changed for different words from the original, but still maintained the four basic steps of information problem-solving. An example is the use of the letters for *Focus, Locations, Information Implementation* and *Product* (Yucht, n.d.: para.3).

As a model, FLIP IT is a decision-making incremental process where, using a four-stage problem-solving approach the students build on what they already know and on what they have learned at each preceding stage. Yucht (1999) identified the four stages namely: helping one focus on their topic (Focus); locating appropriate resources (Links); investigating and implementing the information you find (Input) and producing the results of your findings (Pay-off), as shown in Figure 2.4.

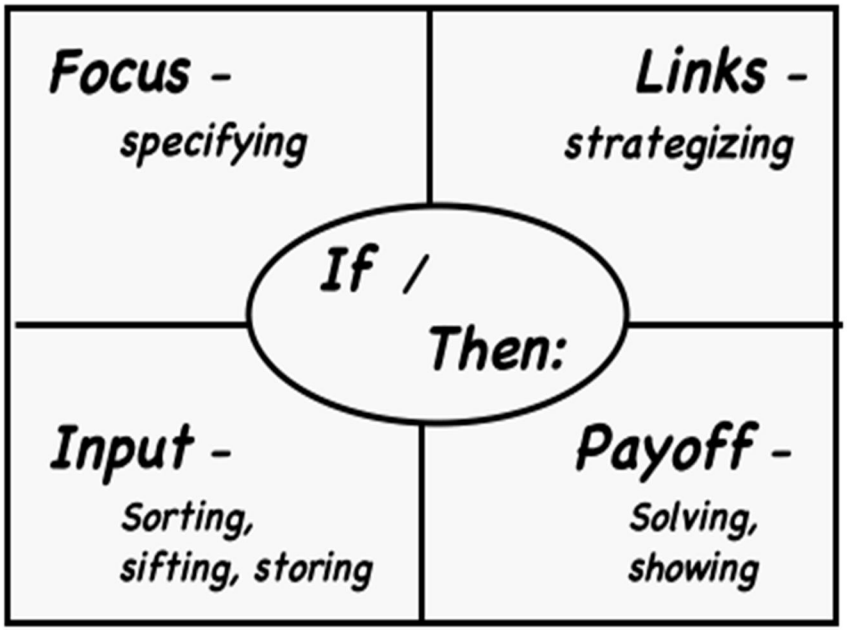

Figure 2.4: FLIP IT! Decision-Making Framework (Source: Yucht, 2011)

In the *Focus* stage, the problem-solver establishes what exactly needs to be done. This includes

narrowing the question to establish the specific problem or issue that needs investigation, for example specifying the topic of a research paper. The second stage is *Links,* where the problem-solver formulates search strategies for the process. This includes choosing the best way to proceed in order to solve the information problem by exploring the different types of resources available and making connections to additional possible resources. The third stage is *Input,* where the problem-solver chooses the kinds of information to use. It includes sifting through the available information to evaluate and separate what is relevant. The selected information is organized and stored, with its sources adequately cited. The final stage is *Pay Off* and involves coming up with solutions to the information problem, using the selected information in the preceding stage and showing the results of the process. This includes evaluating the results against the information problem that was first established. The óIf/Thenô question at each stage encourages the learner to constantly think about what they already know that will impact on the situation at hand. The letters *IT* in the model stands for *Intelligent Thinking*. It reminds the problem solver of the continuous application of intelligent thinking throughout the process. Thus, FLIP IT is an intuitive process with intelligent thinking built into each stage (Yucht, 1999).

Yucht (2011) on her personal website observes that this model can be used for both personal and professional decision-making because of its emphasis on critical thinking at all stages. This model has been lauded for its applicability to any form of information problem-solving process (Yucht, n.d.:para.3).

2.2.6 Sauce Model (Bond, 2001)

According to Bond (2001), Sauce is an information literacy model aimed at providing research, problem-solving and inquiry skills to learners. It is designed to be applicable to various levels and situations of learning. It has six key facets, namely Information literacy, Collaborative and individual learning, Essential skills, Higher thinking skills, Problem solving and ICT integration. Buzzetto-More (2009:56) observed that the Sauce model involves linking what a seeker already knows to keywords, then using the keywords, questions generated and searched from reliable sources. The results of the search are evaluated and used to generate new information that is then used and communicated.

The information literacy facet emphasizes technical and critical skills (Bond, 2011). Technical skills include ability to locate, acquire and store information; while critical skills include the ability to identify an information need, comprehend the information, discard irrelevant information, validate relevant information, communicate the outcome appropriately and clearly, justify decisions and communicate relevant information appropriately, clearly and creatively. One of the key features of the Sauce model is its emphasis on the use of information as a tool to make decisions. Therefore what is communicated is not gathered information but rather ideas, solutions or opinions formed and validated from the information gathered. The collaborative and individual learning facet recognizes individual and group problem-solving situations as part of the learning process and encourages both. Essential skills facet outlines seven essential skills for teaching and learning, communication, numeracy, information, problem-solving, self-management and competitive, social and co-operative, as well as work and study skills.

Furthermore, the Sauce model seeks to ensure an environment where these skills are developed and applied. The higher thinking skills facet involves ability to comprehend, analyze, synthesize and evaluate information for effective problem-solving and decision-making. The problem-solving facet involves engaging learners in relevant problem solving activities, where higher thinking skills are developed. The last facet of ICT integration emphasizes the use of ICT as a tool to enhance teaching and learning. The focus of the model is a tool that facilitates the use of a wide range of technologies for effective and quality learning (Bond, 2001).

Bond (2001) observed that, practically, the six facets described above are experienced through a five-stage process that starts with setting the task, acquiring information, using information, communication and evaluation. In the first stage of *setting the task*, the appropriate key words that link with higher thinking levels are included. The learner realizes that information beyond prior knowledge is needed to complete the task at hand. The second stage is *acquiring information,* which involves defining key words and phrases, writing search questions, choosing appropriate sources, selecting relevant and discarding irrelevant information, validating the information and assessing and reviewing progress. This process is not linear but cyclical, with the user having to go back and forth between different steps. The third stage is *using information,* which involves applying higher thinking skills to utilize information to solve a problem or meet a need, or form an opinion. In the fourth stage, which is *communication*, the

model lays emphasis on clear and creative ways of communicating the solution or idea, rarely presenting the gathered information, unless to validate a decision or choice made. The final stage is *evaluation*, focusing on both the product and the process moved through to complete the task.

According to Bond (2001), this modelôs strength includes emphasis on leading students to higher-order thinking skills and developing learners into independent information-literate people. The explicit stipulation of critical thinking skills that is central to information-seeking and use results in solutions or ideas which are validated and not merely information. The emphasis on the impact of ICT makes it relevant to the current information environment in which the study is found. Figure 2.5 shows the stages marking the Sauce model.

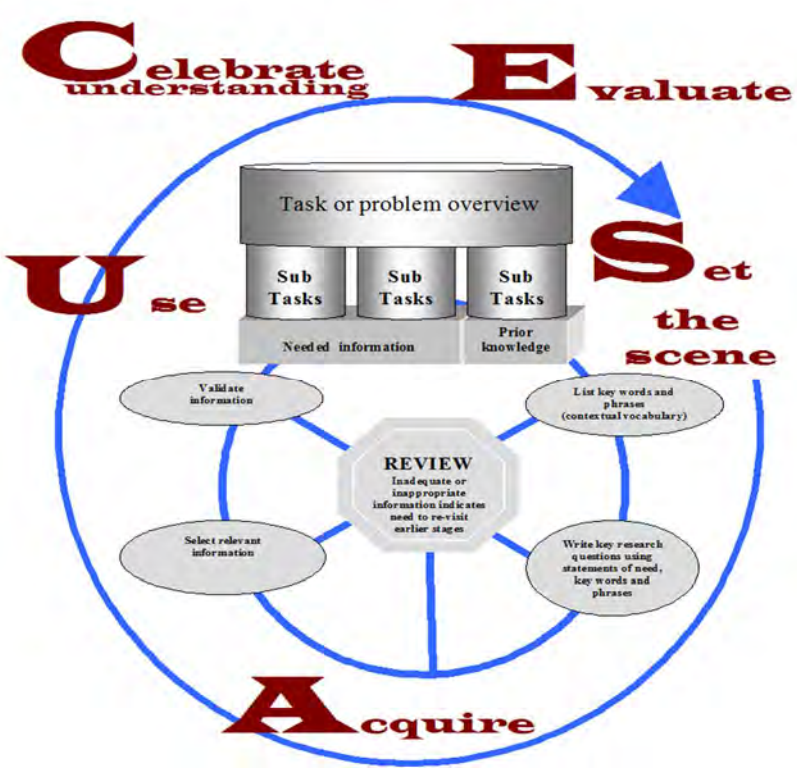

Figure 2.5: Sauce Model Attributes (Source: Bond, 2011)

Despite the above-mentioned models being strong in explaining information literacy as a concept, none of them could be adopted as the main theoretical framework for this study. Whereas the models discussed above mostly focused on the process of information-seeking and problem-solving, the current study leans more on the way IL is experienced by students, an

approach that is well-articulated by the Seven Faces of Information Literacy Model, discussed below.

2.3 Seven Faces of Information Literacy Model (Bruce, 1997)

The present study was underpinned by the Seven Faces of Information Literacy (Bruce 1997; 2003). The origin of this model is Bruceôs doctoral research in Australia. Bruce (1997; 2003) identified and described seven different ways of seeing and experiencing information literacy in a relational model, called ñSeven faces of information literacy.ò Bruce used a qualitative approach with academics in Australia. Bruce (2000) observes that the model is applicable beyond the academic setting, to include the workplaces and the wider community context. The seven faces or conceptions are identified as: information technology, information sources, information process, knowledge construction, knowledge extension and wisdom. Technology and use are the two main spheres, where the seven faces of information exist and Bruce points to an inverse relationship between the two spheres.

According to Webber and Johnston (2006), the faces are ways of helping people reflect on their own approach to IL, appreciate other peopleôs perception of IL and become more information literate. Kingôori *et al*. (2012) credit the Seven Faces model by observing that it is a reflection of the changes in the learning environment where the impact of ICT is predominant. Each ñfaceò is represented by a circle showing *information use*, *place of information technology* and a *unique element* which is the focus in that ñfaceò. The central circle illustrates the element of focus in the given face, while the outer circle represents the marginal element. Bruce (1997) observed that the place of IT and information use in the process of awareness are inversely proportionate, meaning that if IT moves from the central to the marginal awareness, information use will move in the same proportion from the marginal to the central, in each of the faces. What follows is a discussion of the various ñfacesò, illustrating the inverse relationship between IT and information use.

2.3.1 Information Technology Conception

The information technology conception face sees information literacy as using technology for information retrieval and communication. Information is considered as something outside an individual and that people depend on technology to enhance their access to information. Creation of personal communication networks are critical in this face, and IT is central to this

process. Bruce (2003) contends that information literacy is experienced at this level when technology is available and useable and where access to technology depends on the community, as opposed to an individual. Therefore IL is more achievable in a community that supports IT, compared with one where IT is the preserve of individuals. One does not become an expert on his/her own but understands that there is need for help from others and so experts are part of a community. Technology is used to inform and enhance manipulation of the located information.

The Information Technology Conception enabled this study to conceptualize the role that IT played in facilitating IL teaching and learning. The application of information technology to IL learning opens doors and opportunities for passing on IL skills by the way technology changes the learning environment, and finally studentsô earning experiences. Furthermore, IT has become a key component of teaching and learning IL (Baro & Zuokemefa, 2011). This has made it critical to appreciate the role of technology in creation, use and communication of information, and the need to understand the technology in which information operates. Figure 2.6 illustrates the centrality of information technology in this face.

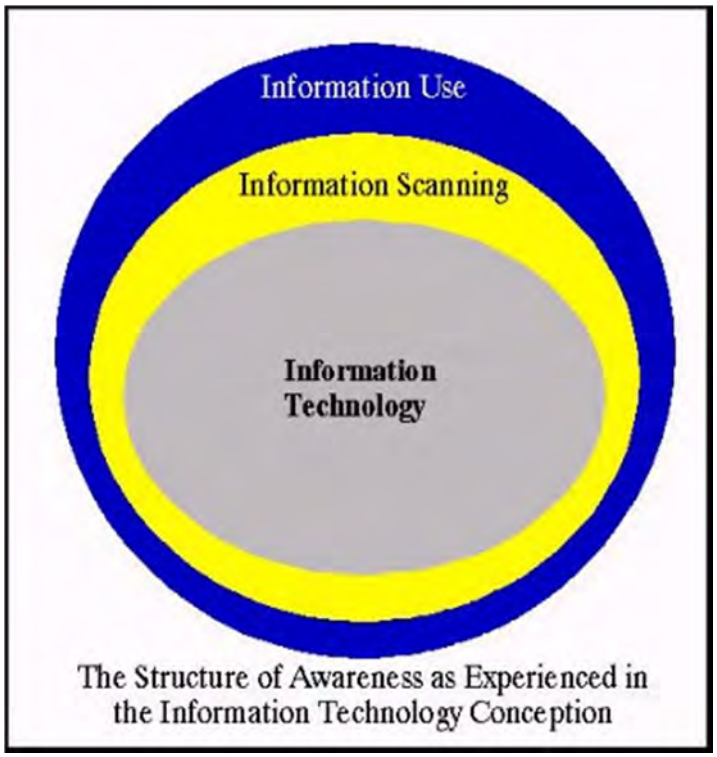

Figure 2.6: Information Technology Conception (Source: Bruce, 2003)

In the next face, attention moves from technology to information sources.

2.3.2 Information Sources Conception

According to Bruce (1997), the information sources conception face sees information literacy as concerned with the ability to find information. This includes knowledge of the various information sources and how they are structured to facilitate access to information therein. The information sources may be human, bibliographic or organizational and in different formats, while the access could be direct or through an intermediary. CILIPôs (2004) definition of IL emphasizes the ñwhere to findò the information needed. This includes understanding the appropriateness of the sources of information. The information sources conception widened the scope of the researcher to consider where, and how information is found, how it is structured, and the various means to access it, as critical elements of teaching IL, which in turn affects studentsô learning experiences. This conception enabled the researcher to seek to identify where students got their information. Knowledge of the different sources of information enhances the understanding of the different ways that information can be accessed. IL learning cannot be complete without an understanding of issues that deal with the source of information. Figure 2.7 depicts the centrality of information sources in this conception.

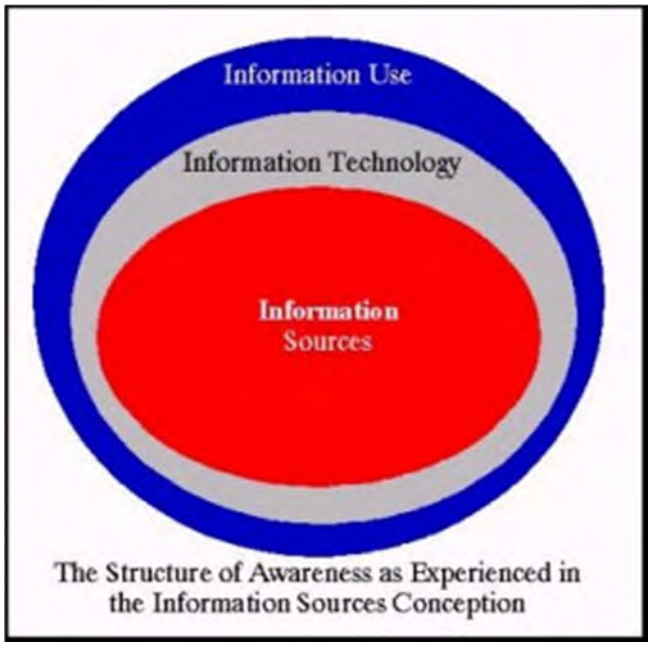

Figure 2.7: Information Sources Conception (Source: Bruce, 2003)

Focus in the next face moves from information sources to information processes.

2.3.3 Information Process Conception

The information process conception face focuses on information processes. This face is concerned with effectively dealing with new situations on the basis of being equipped with a process of finding and using the necessary information. Linked to problem-solving and decision-making, these processes are strategies employed to deal with novel situations using the information gathered. Bruce (2003) notes that, although the precise nature of the process varies from person to person, the expected end result of this experience is effective action, problem-solving or decision-making. Information technology is of least importance in this face and therefore is placed on the outer ring of awareness, as illustrated in Figure 2.8.

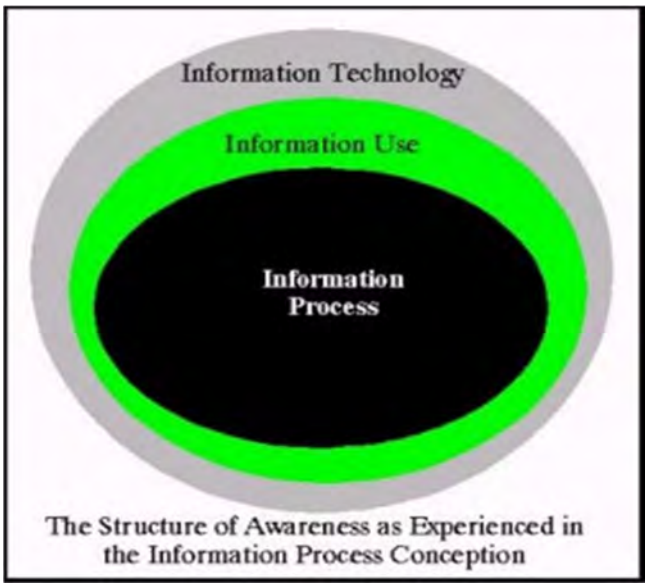

Figure 2.8: Information Process Conception **(S**ource: Bruce, 2003)

In summary, this section identifies experiencing information literacy as being able to confront new challenges because of decision-making and problem-solving skills resulting from knowing how to effectively find and use needed information. The information process conception was applied in this study to help the researcher understand how students used information gathered to execute a process, for example make a decision or solve a problem. IT helped the researcher seek to find through data collection instruments, what students sought information for. Bruce (1999) observed that information processes were not straight and their execution differed among different people and in different times. The next face places emphasis on information control.

2.3.4 Information Control Conception

In the information control conception face, information literacy is seen as controlling information that is found in different formats. This face is concerned with the userôs ability to effectively use various media, besides being able to collect, store and manipulate information. It involves making connections between information and people using tools or the human brain (Bruce, 1999:39). Tools in this case include filing cabinets and computers. Only relevant information is selected for storage, considering the ease of its retrieval when required. The possible value of the selected information for future use is critical. This conception involves analysis of information found within oneôs disposal and to determine how to store and manipulate it to meet a desired goal using electronic tools or human brain. It includes ability to connect what needs to be done with people who need to do it and what needs to be known to have the task done.

This conception was applied to this study as it helped the researcher in finding information on studentsô ability to exploit various information sources using technology to meet their information needs. This for example revealed how students appreciated the rule of the librarian in assisting them find the information and sources they required efficiently. IL learning is about helping people óknowô or acquire skills and this conception helped in ascertaining what students óknewô about IL or their conceptions of IL. In this face, focus of attention is control, as illustrated by Figure 2.9.

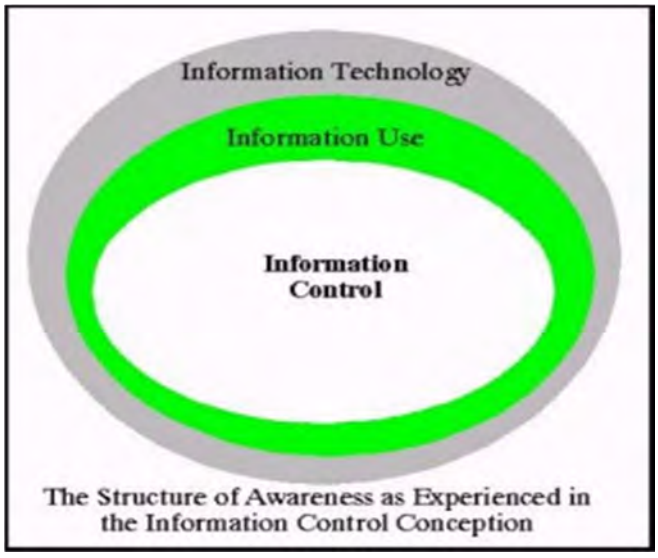

Figure 2.9: Information Control Conception (Source: Bruce, 2003)

Information literate people in this conception are those with the ability to competently retrieve and manipulate information in their reach, using various media. The next face focuses on knowledge construction.

2.3.5 Knowledge Construction Conception

Bruce (1997) observed that the knowledge construction conception face perceives information literacy as building a personal knowledge base in a new area of interest. Since information appears to different people in unique ways, reflection and critical analysis is not likely to lead to a similar understanding for any two people. The idea of a knowledge base goes beyond just storing information. It includes using the information collected to develop a personal perspective. In this category, information is the object and focus of personal reflection in order to build personal perspectives through critical evaluation and analysis of what is read.

The knowledge construction conception was applied to this study to help the researcher investigate how lecturers and librarians helped students to find, investigate, analyse information in order to derive a personal perspective . Knowledge base creation involves adding processed information to information already internalized. Interviews with IL instructors were aimed to discover pedagogical approaches used in IL teaching. Various teaching approaches have different effects on the learners. The specific selection of psychology students availed a group whose study involves critical thinking in understanding phenomena. As Figure 2.10 shows, the critical use of information is the focus of this face.

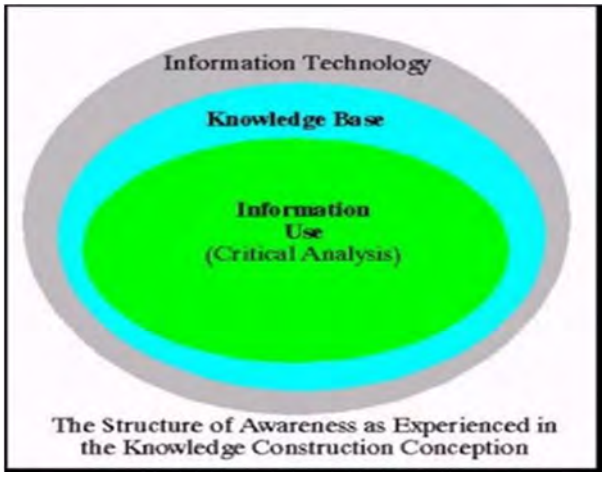

Figure 2.10: Knowledge Construction Conception (Source: Bruce, 2003)

Since different people perceive information differently, Bruce (2003) notes that by focusing on the individualôs perception of information, this face takes on a subjective character. The focus here is knowledge creation using information that has been received and evaluated critically. The next face is knowledge extension.

2.3.6 Knowledge Extension Conception

The knowledge extension conception face perceives information literacy as working with knowledge and personal perspectives developed in the preceding category, leading to the gaining of new insights. The distinctive feature and focus for this category is information use that builds on the personal knowledge base developed and involves capacity for intuition or creativity. Creativity is about how new insights are generated out of personal knowledge and experience. Bruce (2003) posited that the resultant insight could be new knowledge or information and creative ways of doing things due to the effective use of information. In this conception, the mind is greatly employed and, like the knowledge construction conception, the outcome is likely to be subjective.

This face of the model focuses on creating new knowledge by creative use of information that builds on what has already been developed. Raeis et al (2013) found creativity as a key indicator of an information literate student. Their study on third-year students of Isfahan University of Medical Sciences concluded that increasing information literacy in universities played a critical role in training a creative workforce. This conception was applied to this study with regard to its resonation with ILôs goal of developing studentsô ability to find, critically analyse and use information to confidently handle any life challenge (Bruce, 1997 & Breivik, 1998). Since lifeôs challenges are fluid and keep changing, creativity and intuition is required by users of information. As represented in Figure 2.11, intuitive use of information is the focus of this face.

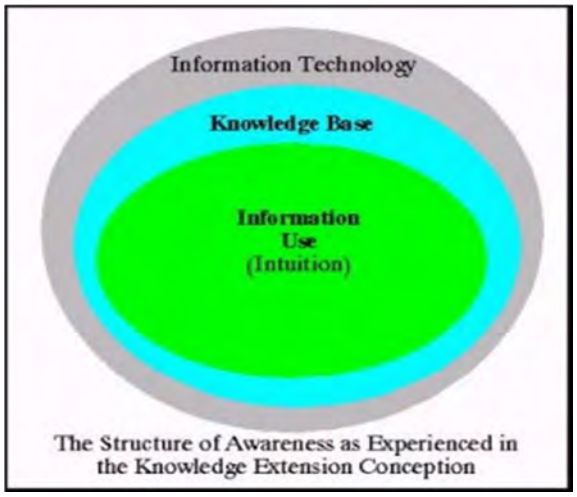

Figure 2.11: Knowledge Extension Conception (Source: Bruce, 2003)

2.3.7 Wisdom Conception

Finally, the wisdom conception face sees information literacy as a wise way of using information by an individual for the benefit of others (Bruce 1997:2003). Areas where wise use of information is exhibited include judgement, decision-making and doing research. Wise use of information involves seeing information in a larger context and understanding the broader issues relating to that information.

In this conception, information use is related to a personal quality. This face informed an understanding on how personal values, ethics and beliefs impacted on the wise use of information when interacting with others. This conception guided the study in establishing what gains had been realized by students from IL learning. Figure 2.12 illustrates the centrality of values and ethics in use of information in this conception.

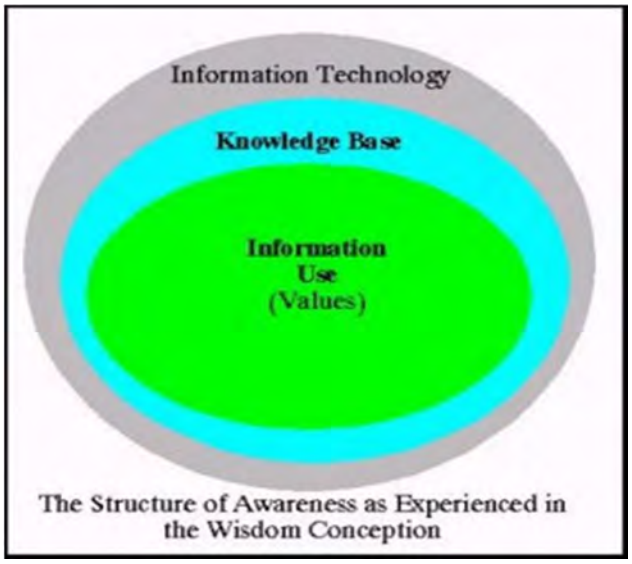

Figure 2.12: Wisdom Conception (Source: Bruce, 2003)

The mapping of research questions to Bruceôs Seven Faces of Information Literacy model is presented in Table 1.1 (see Section 1.9).

2.4 Use of the Seven Faces of Information Literacy Model

Bruceôs model has been used in literature explicitly as a model or specific aspects constructs in other studies. Leading among the studies that used the relational approach to IL are Lupton (2004), Edwards (2005), Bruce *et al*. (2006) and Andretta (2012). Central in the use of the relational model for studying IL is the investigation of the concept from the perspective of the learner, which generates complex dynamics between the learners, information use and the process of learning (Andretta, 2012:14).

Webber *et al.* (2005) applied the Seven Faces model in their study of UK academicsô conceptions of information literacy. The findings revealed different conceptions of IL in each of the disciplines sampled. For example, among other conceptions, academics in marketing saw IL as accessing needed information quickly and easily, to know current trends, applying IT in working with information and acquiring information skills and applying the skills as needed. Academics in the English department, however, conceived IL as accessing and retrieving textual information, using IT as a channel to access information and acquiring and knowing how to use basic research skills. Hughes (2006) applied the Seven Faces model to develop a

model of online information use for learning and to understand studentsô IL in online environments. The model developed incorporated usersô experiences in using information online, reflecting Bruceôs (1997) representation of IL as a multi-faceted experience.

Andrettaôs (2012) article, based on her doctoral research, was inspired by Bruceôs Seven Faces of Information Literacy Model in her investigation of a learner-based approach to teaching research, meaning the relational approach. Andretta found Bruceôs model to be significant in two ways: First it offered a new perspective to learning by demonstrating the relationship between the learner and information that is the basis for problem-solving. She further observed that this approach impacts IL teaching in that it is user-driven, changing from the skill-driven approach of teaching IL that was based on set competencies determined by educators. Second, the way academics in Bruceôs study experienced IL is not how other professions and groups would. Therefore her study has influenced other researchers (Lupton, 2004; Edwards, 2006; Bruce *et al.,* 2007; Andretta, 2012) to investigate how different groups experience IL.

Mattson (2013) observed that use of Bruceôs model in Adrettaôs (2012) study had led to the development of the course *Facilitating Information Literacy* (FILE), that heavily borrows from Bruceôs phenomenographic conditions of relational, experiential and second-order perspective. FILE includes an understanding of the learner and allowing development of learning outcomes by the learner and assessment, using a reflective approach. Mattson posited that teaching using the FILE approach changes learning, with learners needs incorporated in the instruction, as opposed to the conventional instruction that had pre-determined information literacy goals.

Hughes (2006:3) lauds Bruceôs model as a holistic representation of IL dealing with the development of critical approaches to information use. Gross and Latham (2009) applied the Seven Faces model in their investigation of undergraduate perceptions of information literacy and extended the framework to include perceptions of IL, as differentiated in the imposed query model. Finally, Webber and Johnson (2000: 385-386) support the relational approach by Bruce in the Seven Faces of Information Literacy as an appropriate alternative way to investigate studentsô learning experiences.

Perselli and Åman (2006) also used the Seven Faces model as a theoretical framework for their study, which aimed to establish the perception of university lecturers on studentsô need for information literacy at Linköping University. The results showed that lecturers viewed IL as very important for undergraduate students. However, their dismissal of the need for IL at graduate level was based on their view of IL as a tool and not a learning process.

2.5 Justification for the Choice of the Bruce Model for this Study

Being a product of an in-depth qualitative study in a higher education setting, Bruceôs model has an underpinning of student experiences. Bruceôs model also more explicitly engages information technology as one of its key constructs, compared to the other models that implicitly engage with information technology. Since information communication technology (ICT) and IL are now inextricably intertwined (SCONUL 1999; Bruce 2003), this model became the choice for the present study because of the place it accords ICT in IL. Since one of the research questions seeks to understand the role of ICT in IL teaching and learning, this model was deemed appropriate.

The Seven Faces model gives a framework that comprehensively covers all the research questions for this study, as earlier stated (see Table 1.1). The model has enriched the understanding of information literacy as a construct that transcends traditional library literacy into building knowledge and the skills base needed in the workplace (Bruce, 1999). She further observes that relationships can now be established between the Seven Faces and workplace processes, which effectively link information literacy to the learning organization. The Seven Faces also suggest directions for educators and may be of use in community settings. Finally, the Seven Faces model more explicitly than other models uses cognitive conditions (knowledge, wisdom and understanding) to describe information literacy situations which are attributes closely related to psychology. Since the study used psychology students, this model, rather than any other, was found fitting.

2.6 Summary

Chapter Two outlined the main models applied in information literacy studies and discussed the theoretical model underpinning this study, to explain how fourth-year psychology students experienced information literacy. The models reviewed in this chapter included the Big 6 (Eisenberg & Berkowitz, 1988), Seven Pillars of Information Literacy (SCONUL, 1999),

Information Seeking Process (ISP) (Kuhlthau, 1985), Focus, Links, Input and Payoff ï Intelligent Thinking (FLIP IT) (Yucht, 1999), Seven Faces of Information Literacy (Bruce, 1997) and Sauce (Bond, 2001). Generally, most models discussed covered similar aspects of information literacy, such as the ability to define an information problem, the critical role of understanding information sources and how to access information in them and evaluating information to create knowledge. The Big 6 and ISP are similar in the stages, though they differ in terminologies as the process progresses. Although the Big 6 is more direct in having students define the problem, while the process is longer in ISP, the strength of ISP over other models is its focus on studentsô feelings and mental state as the process progresses. As Wolf (2003) notes, the Big 6 draws its strength from the fact that it has been developed to be a generic model that can be used in several settings and for different activities, although it might not be appropriate where the focus is very specific, as in this study.

Differences among the models were mainly in the emphasis on particular variables of IL, or the order of the various skills expected. For example, the Seven Faces model emphasizes the relationship between technology and information use and does not follow the information problem-solving structure adopted by the Big 6, ISP, Sauce and the Seven Pillars models. The ICT variable is key to this study and the two other models that discuss ICT are Seven Pillars and Sauce, although not emphasizing ICTôs centrality, as does the Seven Faces. However, the discussion of the impact of ICT highlights it as foundational to being information-literate in the technological era in which we live. The Big 6 addresses IT but, implicitly in its variables, it does not clearly state the place of IT in developing IL in learners. The model only mentions that IT has changed the note-taking step by replacing index cards with computer software. Whereas the Big 6 emphasizes processes and skills, the Seven Faces, like the Seven Pillars, emphasize knowledge about the information context.

An overview of the models reveals them as frameworks that are rigid in some ways. There is need for more flexibility for them to reflect the reality of the learning process that is very complex; and to allow for the differences among learners. The Seven Faces seems perhaps more flexible in attempting to understand how learners experience the learning process through engagement with information and context, rather than establishing a set of skills.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

In Chapter Two the theoretical framework was presented. Chapter Three provides a detailed review of the literature, by building on the overview that was provided in section 1.8 of Chapter One. This chapter gives an overview of IL as a domain, establishes the gaps that the study seeks to fill and gives direction for the present study. This chapter presents literature on IL, guided by the key research questions.

The study reviewed literature on the following broader and related issues to IL to give context for the study: IL concept, literacy spectrum, student learning experiences. Literature reviewed also included key variables gleaned from theory, which include: information technology, information process and information sources. Resources reviewed included print and electronic scholarly journal articles, reports, reviews and books.

Chapter Three is organized as follows: 3.1 Introduction; 3.2 Definition and development of information literacy concept; 3.3 The role of information literacy and IL programme goals; 3.4 The literacy spectrum and concepts related to information literacy; 3.5 Information literacy conceptions and learning experiences; 3.6 Role of ICT in information literacy learning; 3.7 Information literacy initiatives and challenges in higher education; 3.8 IL pedagogical approaches and assessment; and 3.9 Summary of literature reviewed and gaps in the literature reviewed. Both empirical and theoretical literature is reviewed in every section.

3.2 Definition and Development of Information Literacy

The concept of information literacy has been defined and interpreted in various ways since its inception in the nineteen seventies. Different terms have been used to refer to information literacy including: information skills (Johnson, 2001), library skills, research skills, study skills, bibliographic instruction, library orientation and information competency (Dangani, 2009; Virkus, 2003). Some accounts trace the origin of the IL concept to the nineteenth century (Grassian & Kaplowitz, 2001:14), while others trace it to the mid twentieth century (Knapp, 1956:224). However, the term information literacy was first used by Zurkowski (1974), in a

proposal to the national communication on libraries and the National Commission on Library and Information Science (NCLIS) in 1974. In his report, he stated that information literates were people trained to apply information as a resource to their work, especially those who had learned techniques to use information as tools to find solutions to problems at their workplaces (Zurkowski, 1974).

The report declared the establishment of a national programme to achieve universal information literacy by 1984. As opposed to library or bibliographic instruction that concentrated on teaching the use of library tools to access information, the IL concept grew as a response to the expanding variety of information formats that made information available to students outside the library (Grafstein, 2002:197). There was a need to prepare students in a manner that was not limited to a particular format or physical library.

IL has been defined by several authors from different perspectives. A few of these definitions that are foundational in guiding the understanding of the concept in this study are highlighted briefly, in chronological order. After Zurkowskiôs application of the term in 1974, the seminal event in the development of the IL concept is traced back to the American Library Association's (ALA) Presidential Committee on Information Literacy, formed in 1987. The final report of the committee declares: ñto be information literate a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the information obtainedò (ALA, 1989:para 3). The definition in the American Library Association's Final Report (1989) has been widely accepted, leading to a renewed emphasis on information literacy in all education sectors (Bundy, 2002). Doyle (1994) defined an information literate person as one who recognizes that accurate and complete information is the basis for intelligent decision-making; recognizes the need for information; formulates questions based on information needs; identifies potential sources of information; develops successful search strategies; accesses sources of information, including computer-based and other technologies; evaluates information; organizes information for practical application; integrates new information into an existing body of knowledge; and uses information in critical thinking and problem-solving.

The Chartered Institute of Library and Information Professionals (CILIP) defined IL in similar terms as ALA, by declaring that being information literate was ñknowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical mannerò (CILIP, 2011:para 1). This definition implies skills that include an understanding of a need for information; the resources available; how to find information; the need to evaluate results; how to work with or exploit results; ethics and responsibility of use, how to communicate or share your findings and how to manage your findings. Because it is not dependent upon any one technology or set of technologies, 'information literacy' has been eagerly taken on board by librarians (Martin, 2008:160) and governments (Fieldhouse & Nicholas, 2008:50) alike. Indeed, IL goes beyond a set of skills. Similarly, the Center for Intellectual Property in the Digital Environment describes information literacy as a way of thinking rather than a set of skills, emphasizing critical and reflective capacities, as well as disciplined creative thought, that impels the student to range widely through the information environment. When sustained through a supportive learning environment, information literacy can become a dispositional habit of mind that seeks on-going improvement and self-discipline in inquiry, research and integration of knowledge from varied sources (CIPDE, 2005: viii-ix).

Three key words that are repeated in several definitions of IL are skill, competence and literacy. The Merriam-Webster online dictionary defines skill as imaginative ability in designing or implementing something new. The same dictionary defines competence in terms of physical or mental power to do something, while literacy is the knowledge gained in the process of education (Merriam-Webster Online, n.d.:para 1). An information literate person therefore goes beyond merely acquiring a skill and being able to apply it, but includes understanding and evaluating information before appropriately using it. As the information environment keeps changing, especially as affected by technological changes, the specific definitions of IL also change. However, the key elements of IL remain and are only modified to reflect the changing information environment and give emphasis to certain aspects. The wording of the definitions will also change, but the meaning remains the same.

3.3 Literacy Spectrum – Concepts related to Information Literacy

This section briefly analyses the concept of information literacy, by looking at the concepts relate to IL in literature. Literacy is a concept that seems easily understandable, yet it is as

complex as it is dynamic. Rassool (1999) observes that the definition of information literacy changes over time, as society transits from one socio-historical or ideological or technological ambient to another. The Merriam-Webster online dictionary (3 May, 2013) defined literacy as ótthe quality or state of being literate and, further, a literate person as one who is educated, able to read and write and one having knowledge or competence. Merriam-Websterôs definition was replicated in UNESCO (2006), in the education for a global monitoring report that goes broader by describing literacy in the form of four understandings: first that IL literacy is an autonomous set of skills. The skills include reading, writing and oral expression. The second understanding included literacy as applied, practised and situated. The third understanding described literacy as a learning process and the fourth described literacy as text.

Building on the UNESCO definition, Kern (2000) noted that that reading and writing are practices that act as tools for thinking and learning intended to expand oneôs understanding of the world. Street (2003) is more specific, in that the dynamism of concept makes it differ from context to context and from culture to culture. This dynamism, and the socio-cultural practices that are covered by use of the term ótliteracyô, led Lankshear and Knobel (2003; 2006) to adopt the use of the term ótliteraciesô. This study adopted the views of Martin (2008:155) and Street (1995) that the concept of literacy articulated a key characteristic of participation in society, with literacy education seeking to prepare the students for this participation. Without limiting it to a particular technology, Lankshear and Knobel (2006:64) define literacy as ñSocially recognized ways of generating, communicating and negotiating meaningful content through the medium of encoded texts within contexts of participation in discourse (or as members of discourses).ò The relationship of information literacy with other literacy concepts is illustrated in Figure 3.1.

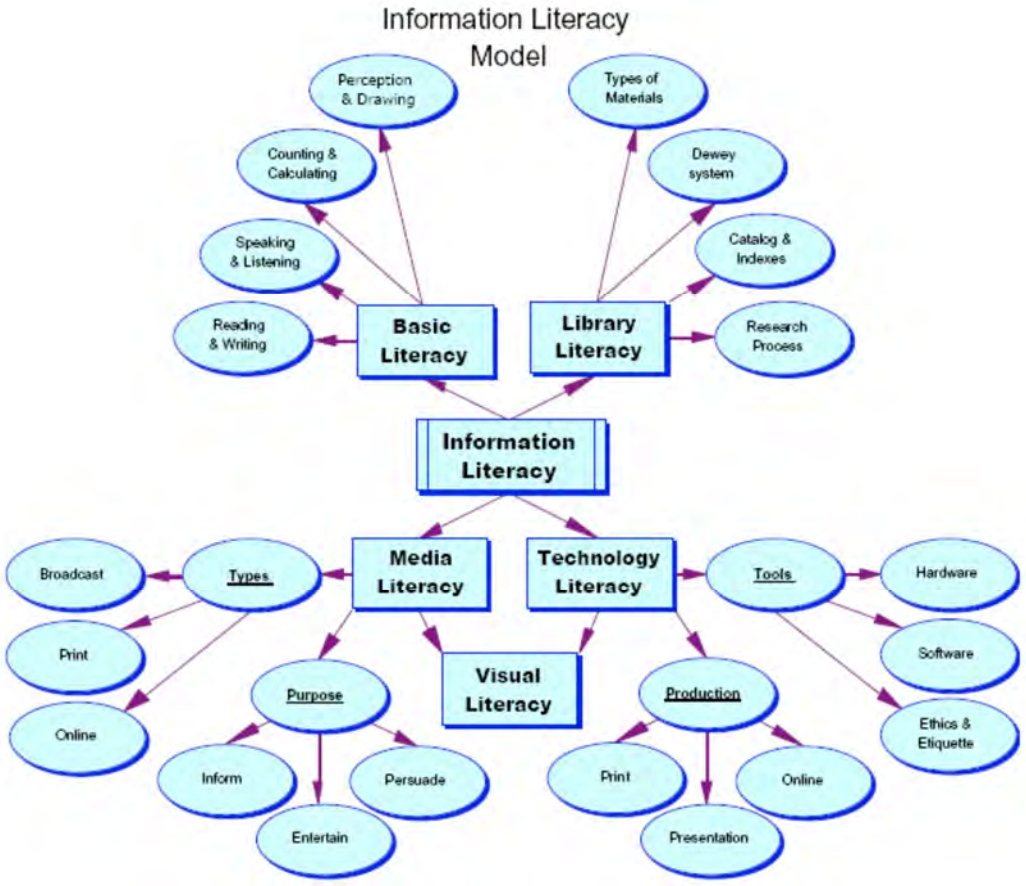

Figure 3.1 IL Related Concepts (Source: Ferguson, 2005)

3.3.1 Basic Literacy

Basic literacy includes alphabetic literacy and is also referred to as functional literacy (Nutbeam, 2006). According to Lemke (2012), basic literacy refers to language proficiency and numeracy at levels necessary for success on the job and in society. Similarly, Nutbeam (2000) describes basic literacy as acquiring sufficient basic skills in reading and writing to be able to function effectively in everyday situations. Looking beyond grammar and semantics, Kagitcibasi, Fatos and Gulgoz (2005) agreed with Rassoolôs (1999) reasoning that functional literacy requires that people are competent to read, speak and understand a language.

3.3.2 Library Literacy

For a long time the library has sought ways to help its users get the information they need in an effective and efficient manner. Terms used in literature for these efforts include *Library*

instruction, User education, Bibliographic instruction and *Library orientation* (Fatzer, 1987; Bawden, 2001; Coravu, 2012). According to Bell (1990:32), library literacy refers to ñthe acquisition of a range of skills relating to identification of and familiarity with sources and information seeking processes, usually through formal bibliographic instruction and informal user education.ò Coravu (2012) notes that bibliographic instruction; user education and library literacy refer to initiatives that help a library user to be aware of, and able to use, information resources available from the library. She differentiates library literacy from information literacy by stating that IL is a wider concept that implies attaining a set of information abilities that are not limited to a particular format or location. Furthermore, Fatzer (1987) regards library literacy as being beyond acquiring specific skills that enable one to get resources in a library. She defined library literacy as being able to follow a systematic path or search strategy to locate information resources and evaluate their relevance with regard to the search topic.

3.3.3 Digital/Information Communication Technology (ICT) Literacy

It is becoming increasingly difficult to discuss information literacy and not mention technology. Digital technology has permeated most spheres of life. Learning is not an exception as pressurized by the students, governments, non-governmental organizations and institutional desires. Considering its impact, Swan (2011) states that digital technology not only changes the way we communicate but also the way we think. According to Gilster (2007), digital literacy refers to the ability to understand and use information in its multiple formats, from a wide range of sources when it is presented via computers. Prensky (2001) refers to todayôs students as digital natives, because their whole life is immersed in digital technologies and they process information and study in different ways from the preceding generation. Digital literacy needs to be seen and understood as a plural phenomenon comprising many digital literacies such as computer literacy, media literacy and media competency (Fourie, 2008). Shapiro and Hughes (1996) explained that information and computer literacy, in the conventional sense, are functionally valuable technical skills. They further observed that information literacy needed to be broadened to include being considered as a new liberal art concept, moving it further than mere concern with the basics of computer use to critical reflection on the nature of information itself, its technical infrastructure and its social, cultural and even philosophical context and impact.

According to the International ICT Literacy Panel (2002:2), ICT literacy is using digital technology, communications tools and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society. This definition reflects a broad understanding of the concept, incorporating critical thinking and problem-solving skills alongside the application of technical skills and knowledge covering simple to complex tasks. This definition also enumerates five critical components of ICT literacy as *Access* - Knowing about and how to retrieve information, *Manage* - applying an existing organizational or classification scheme, *Integrate* - interpreting and representing information, *Evaluate* - judging the quality, relevance usefulness or efficiency of information, and *Create* - generating information by adapting, applying, designing, inventing or authoring information (ICT Literacy Panel, 2002:3). Whereas the access component of this definition emphasizes the need for skills to get to the information needed, the ICT literacy definition provides the tool that would enhance getting to the information needed. Furthermore, both IL definition and ICT literacy definition include the important aspect of evaluation, ability to ensure the information accessed addresses the information need in question. Emphasis of ICT literacy is on the integration of technical skills with cognitive skills. This is summarized by Martin (2005:135-6), who defines digital literacy as:

> the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in context of specific life situations, in order to enable constructive social action; and to reflect upon this process.

Martinôs definition highlights three important aspects of understanding digital literacy: social awareness, critical thinking and knowledge of digital tools. Social awareness includes understanding of oneôs social context and access to its cultural, economic and political structures. It includes an understanding that technology is societyôs tool, medium and reflection of changes therein and therefore, the need to know the relationship between the tool and the users. Critical thinking focuses on the individualôs engagement with, and articulation of, the symbols and meanings of daily life (Martin & Grudziecki, 2006: 250), using digital technology. This transforms the individualôs thinking capacity as technology develops. The knowledge of digital tools involves the ability to utilize the various tools to realize various information goals.

After analysing the various definitions of digital literacy and new literacies in literature, Belshaw (2012) describes what he calls eight essential elements that he believes best define digital literacy. They are: *Cultural*-the need to understand the various digital contexts an individual could be in, *Cognitive*-understanding that literacy is about expanding the mind; *Constructive*-ability to create something new; *Communicative*-an understanding of how communications media work; *Confident*-understanding that the digital environment can be more forgiving with regard to experimentation than physical environments; *Creative*-understanding that there is a need to create new knowledge by doing new things in new ways; *Critical*-involves a reflection upon literacy practices in various domains and *Civic*-involves use of literacy practices for betterment of civil society. Belshaw concludes that digital literacies are transient: they change over time, may involve using different tools or developing different habits of mind, and almost always depend upon the context in which an individual finds him/herself (Belshaw, 2005:204).

Martin (2008:156-7) refers to digital literacies as an over-arching matrix that encompasses computer/IT/ICT literacy, technological literacy, information literacy, media literacy, visual literacy, communication literacy and digital literacy. Europeôs Information Society Thematic Portal (2007) emphasizes Martinôs position by observing that people need to be digitally literate and equipped with the skills to benefit from, and participate, in the Information Society. This includes the ability to use new ICT tools and the media literacy skills to handle the flood of images, text and audio-visual content that constantly pour across the global networks. Cordell (2013:179) describes specific competencies for a digitally literate person as one who:

- has skills required to find, understand, evaluate, create and communicate digital information in a variety of formats;
- is competent in using various technologies appropriately to search, interpret search results and evaluate information retrieved for quality;
- understands the relationship between technology, lifelong learning, personal privacy and information stewardship;
- applies digital skills to appropriately communicate with family, peers and the public;
- uses digital skills to actively engage in society, contributing to an informed community.

According to Cordell (2013), digital literacy is complementary to information literacy and the two aim to prepare a student in higher education to engage effectively in academics and in the society.

3.3.4 Media Literacy

According to Christ and Potter (1998), media literacy means different things to different people. The term has been in use since the early 1980s, with the most adopted definition found in the Aspen Institute Report of the National Leadership Conference on Media Literacy of 1992, which defines media literacy as ñthe ability to access, analyze, evaluate and communicate messages in a variety of forms (Aufderheide, 1993:xx). The European Commission brings in the question of context of the communication, by describing media literacy as ñthe ability to access the media, to understand and to critically evaluate different aspects of the media and media contents and to create communications in a variety of contextsò (EC Media Literacy Portal, n.d.).

However, in discussing the ñwhy media literacy?ò question, Badke (2009) contended that the need for media literacy arose after the need to have students evaluate the role of media in their lives. This included the need to evaluate and analyze what students see in the various media, from advertisements to social media. The emphasis of media literacy is the information literacy aspect, which deals with evaluation of information and its source for validity, reliability and usefulness. In terms of breadth, Bawden (2001:225) observed that media literacy included both print and post-print media and is a component of information literacy. Bawden specifically noted that media literacy concerned the ability to critically think and assess information that is found in mass media (television, radio, newspapers and the internet).

3.3.5 Visual Literacy

The term óvisual literacyô in literature is interchangeably used with óvisual competenceô (Griffin, 2008) and is closely related to media literacy. The importance of visual literacy has been growing. Benson (1997) notes that the integration of images and visual presentations in teaching and learning materials is inevitable. Benson (1997:141) cites Aristotleôs statement that ñwithout image, thinking is impossible.ò This emphasizes the fact that images are critical for communication and therefore there is a need for skills to understand and communicate visually, even as new technologies that enhance visual communication emerge. Several definitions of

visual literacy exist, from narrow to broader explanations to those with greater or lesser complexity, and varying from discipline to discipline (Pettersson, 2009). The commonly referred to, and foundational definition of visual literacy, is by Debes (1969:25), who defined visual literacy in terms of visual competencies that result from seeing and integrating experiences of other senses. According to Debes (1969), a visually literate person is one that is able to discriminate and interpret visible actions, objects, symbols, natural or man-made, that he encounters in his environment, and be able to creatively use the competencies to communicate visually.

Ultimately, visual literacy involves oneôs ability, not only to see, but to understand the image they see and the context, think about it and clearly communicate the message in whichever format. It is trying to decipher the intentions of the creator of the image and, at the same time, determining the validity of the information it communicates (Thibault & Walbert, 2003). As a precursor to effective communication, visual literacy involves reading the imagery of the past or the imagery of the present. To be visually literate requires us to readjust our thinking habits and have another lookð to review what we have viewed and make meaning from it (Santas & Eaker, 2009). Thibault & Walbert noted that the determination of the intentions and validity of images is critical due to the increasing proliferation of images in our culture ð in newspapers and magazines, in advertising, on television and on the Web. Similarly, Lemke (2012) noted that visual literacy skills advanced thinking, decision-making, communication and learning, among students. The images include maps, films, animations, charts, photographs, paintings and graphic arts.

3.3.6 Other Literacies

This section describes a few other literacies that were considered significant to this study, including academic literacy, cultural literacy and critical literacy.

3.3.6.1 Academic Literacy

Ballard and Clanchy (1988:8) defined academic literacy broadly as a studentôs capacity to use written language to perform those functions required by the culture of the academic institution in ways and at a level judged to be acceptable by the reader. That capacity refers to a set of skills that would help a student find how to acclimatize to the new environment and practices. Lea and Street (1998:159-160) provided a very succinct description of academic literacy as the

ability to read and write within disciplines that enables students to learn new subjects and discover new areas of study. Academic literacy happens in the context of institutions of learning that act as places of discourse and power. They build on the earlier approaches that were based on developing skill and socialization by adding on the consideration of power relations and institutional or epistemological context.

3.3.6.2 Cultural Literacy

According to Christenbury (1989), cultural literacy refers to a familiarity with the dominant culture. Christenbury adds that students and the population at large need a body of general and specific knowledge as a point of reference for all. Hirsch (1987) pointed out that there is need to have a common body of knowledge possessed by all members of a society and that schools are best placed to impart this shared knowledge. Hirsh emphasized the importance of literacy in maintaining a national culture. However, McDaniel (2009) sees it futile to try constructing a comprehensive list of key elements or concepts required for cultural literacy of any society by wondering who would be able to create the list, and what criteria would be used.

Despite different emphases and specific perceptions, the literature reviewed seems to generally point to cultural literacy as the awareness of and ability to communicate in oneôs cultural context, and this is best acquired by being taught. According to Green (1999), cultural context refers to a specific group of people, as described by their way of life, including beliefs, values and communication. The Metri Group (2001) described the profile of a culturally literate student as one who:

- understands the impact of culture on behaviour and beliefs.
- is aware of specific cultural beliefs, values and sensibilities that might affect the way that they and others think or behave.
- understands that historical knowledge is constructed and therefore moulded by personal, political and social forces.
- is familiar with and able to effectively engage in new technology environments, including social media.
- is able to engage and positively interact with individuals from other cultural groups.

In summary, Hirsch (1987) described to be culturally literate as to possess the basic information and skills needed to thrive in the modern world.

3.3.6.3 Critical Literacy

Critical literacy has been described in different ways in the literature. Jewett and Smith (2003) described critical literacy as critically analysing and transforming texts by acting on knowledge that texts are not ideologically natural or neutral, that they represent particular points of views while silencing others and influencing peopleôs ideas. It is also referred to as critical competence (Luke & Freebody, 1999) and aims to transform and produce a practice by seeking to understand and interpret the many meanings, beliefs and assumptions behind written texts (Green, 1999; Luke, 2000). The knowledge gained from interpretation and critical analysis gives one cognitive skills that enables one to exert greater control over life events and situations.

3.4 Information Literacy

The need for information literacy has been well documented in the literature of library and information studies (Dupuis, 1997). The significance of IL is closely related to the nature of the skills, competencies and abilities that come with it, and the higher levels of understanding concerning the context of information in todayôs society. The world finds itself with an avalanche of information in great quantity, of varying quality and in various formats (text, electronic, image, spatial, sound, visual, numeric), a situation commonly referred to in information studies literature as information overload (Rockman, 2004; Eppler & Mengis, 2004). Bruce (2004:11) captured the importance of IL well by her observation that information literacy was the natural extension of the concept of literacy. Bruce added that IL was the catalyst required to move todayôs information society to tomorrowôs learning society. The significance of IL is therefore felt in all aspects of society, from educational institutions to society in general, including the corporate sector.

3.4.1 Information Literacy at the Workplace

Application of IL in the workplace context is likely to be more challenging compared to educational contexts. Williams *et al*. (2014) observed that, whereas information sources in educational settings comprised print and digital information, at the workplace sources of information were predominantly people, with the settings being very different from institutional ones.

A key study on IL at the workplace was undertaken by Christine Bruce in Ausralia (Bruce, 1999). Bruce used the Seven Faces of information literacy as a framework to investigate information experience of IL among various types of professionals. Findings revealed that workers experienced IL in seven ways that were closely related to their work processes, including scanning the environment to find and be aware of what was happening around them, provision of internal and external information resources and services, information processing, corporate memory, information and records management, research and development and professional ethics and codes of conduct. The study established that IL has a key role to play in organizational processes and is also an important characteristic of 21st century employees. Awareness of the importance of information by individual employees and the organization will help organizations prioritize information in planning and budgeting processes.

Similar realizations of the place of IL beyond the academic setting are evident in Europe, Australia, Singapore and South Africa, where IL is considered economically necessary (Cheuk, 2002:1). In a paper presented at the Australian Library and Information Association, Special Health and Law Libraries Conference, in August 2001, OôSullivan (2002) presented information literacy skills as a solution to the information overload. Her study concluded that, while the important role of IL in a knowledge-based economy cannot be overemphasized, IL is poorly addressed, resulting in a workforce that is poorly equipped to effectively deal with information at their workplaces.

Cheuk (1998) investigated auditorsô experiences of seeking and using information at their workplace in Singapore. Applying an in-depth case study approach, the findings revealed that for an employee to be information literate, searching data and finding it must translate to useful information to answer specific questions from their roles and tasks at work. The study revealed the need to introduce employees to possible sources of information for their particular areas of work and strategies for retrieving them.

A study by Grieves (1998) compared several studies in the UK and Canada on the use of information in decision-making at various places of work. Different groups had different accesses to information sources for comparison purposes. Findings from the study revealed that use of timely and appropriate information resulted in better decision-making, handling the

decision-making process differently, acquisition of new knowledge, time was saved, information added a new dimension and substantiated prior knowledge. The study revealed that information positively impacted other activities, including avoiding conflict among employees or with their external environment.

The significance of information literacy to individuals and businesses is seen in their ability to keep people informed on how to get information needed from the vast quantity and quality of information that is in different formats for their daily information needs (ALA, 2006). Irvingôs (2007) study of IL in the workplace found employeesô lack of information literacy skills as one of the main difficulties in handling the vast amounts of information in different formats. Although he found this as varying from one profession to another, similar findings had earlier been documented in Bruceôs (1999) study. The American Library Association concludes that information literacy, therefore, is a means of personal empowerment that allows people to verify or refute expert opinion and to become independent seekers of truth. The study further revealed that information literacy is central to the practice of democracy, because it enables citizens to recognize propaganda, distortion of facts and other abuses of information and statistics (ALA, 2006). The United States House of Representatives member from New York, Major R. Owens, said: ñInformation literacy is needed to guarantee the survival of democratic institutions.ò He added that voters with information resources are in a position to make more intelligent decisions than citizens who are information illiterate (Owens, 1976:27).

Moreover, the corporate world embraced IL when Drucker (1992), the management expert, observed that it was not only imperative to have information literate executives, but that companies, as well, needed to be information literate. Questions to be asked by businesses include the type of information needed, when it is needed, the format in which it is needed and where to find it. Drucker felt that although information was an organizationôs main tool, it did not receive the attention it deserved, with many employees unable to use it effectively (Drucker, 1993). Rockman (2004) stated that a shift to knowledge-based economy calls for IL skills for workers on a daily basis. They need to be able to locate relevant information, critically analyse and access its value and authority and use it legally and ethically. He observed that lack of this can negatively affect a business and make it less competitive in the national and world economic environments. Foreman and Thomson (2009) investigated IL in

the Scottish government. The results revealed that IL was a critical skill needed by government staff for decision-making. This required training in information skills for accessing, critical thinking and evaluation of sources of information.

This section has attempted to demonstrate that information literacy is no longer a preserve of an educational institution setting, but has attracted more attention in the workplace and continues to do so (Kirk, 2004). IL at the workplace can increase productivity by saving time and wastage in the line of production and improving the quality of decisions and communication among employees and their external environment and by increasing access to quality and reliable information.

3.4.2 Information Literacy in Higher Education

Todayôs education system is challenged to produce learners and workers that are ready to perform well in the information age (Doyle, 1994). Information literacy initiatives in academic settings have been implemented that include a variety of instructional approaches such as course-related library instruction sessions, course-integrated projects, online tutorials and stand-alone courses (Spitzer, Eisenberg, & Lowe, 1998), all aimed at assisting students enhance their information competencies. Several empirical studies show that students entering colleges and universities, especially in developing countries, lack information competence skills (Kavulya, 2003; Lwehabura 2007; Dadzie 2009; Jiyane & Onyancha 2010; Amunga 2011). The concept of information literacy is not synonymous with, but closely related to, information seeking and learning (Breivik, 1998). For this reason, ALAôs (1989) definition of information literacy was transformed into learning outcomes for high schools and later adopted by the Association of College & Research Libraries (ACRL) in 2000 in articulating five competency standards for college and university graduates. The information literate student:

1. determines the nature and extent of the information needed.
2. accesses needed information and its sources ethically and efficiently.
3. evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.
4. individually, or as a member of a group, uses information effectively to accomplish a specific purpose.

5. understands many of the economic, legal and social issues surrounding the use of information and accesses and uses information ethically and legally.

Rockman (2004) stresses that IL in an academic context is a campus-wide issue that should involve all administrators, faculty, librarians, media and information technologists, assessment co-ordinators, faculty development directors, service learning specialists, student affairs personnel and career development professionals. Similarly, ACRL (2000) and Saunders (2012:226) note that IL success requires a collaborative effort. Amalahu, Oluwasina and Laoyeôs (2009) study of usersô e-learning information needs at Tai Solarin University of Education in Nigeria found the need to increase the presence of information literacy in their curriculum, to encourage better use of electronic resources available, since many users preferred the electronic resources over print and the internet over the library. The study suggested that users needed to be equipped with skills and knowledge that would enable them to succeed in their academic endeavours and beyond, where lifelong learning is embraced. Dangani (2009) explained that the role of IL in academic institutions is to prepare lifelong learners by developing their ability to think critically, use information socially and ethically and be conversant with current IT trends. He feels that for the survival of individuals, organizations or nations in the 21st century information society, IL skills are a pre-requisite. This is because of the understanding that there is so much information in so many formats and this can be overwhelming for students and the rest of the population (Dupuis, 1997).

The Boyer Commission Report, *Reinventing Undergraduate Education* (1998), conjectured that undergraduate education needed to be a continuum that prepared students to be continual learners after graduation, by equipping them with critical thinking skills. Besides, students need confidence in handling information if they are to succeed in an environment such as this. They will find themselves in a better position to handle information that comes their way if they have the skills to find, select, interpret, evaluate, organize and use information for specific purposes. University students will benefit from IL by transferring the IL, knowledge and skills across all the other courses they take. An understanding of the legal and ethical implications of information use will be beneficial to the students, especially with regard to ethos and respecting intellectual property values. While recognizing the importance of IL for educational initiatives, Boyerôs Report noted that, although information is a precious resource, the challenge of

educators is to help students make sense of a world described by some as experiencing an óinformation overload.ô

The concepts of lifelong learning and information literacy were noted to have a mutually reinforcing relationship with each other. Dangani (2009) referred to the relationship as being critical to the success of every individual, organization or state. In a study on IL among undergraduates at the University of California-Berkeley, Maughan (2001) concluded that students think they know more about accessing information and conducting library research than they are able to demonstrate when put to the test and that students continue to be confused by the elementary conventions for organizing and accessing information. The study demonstrated that lack of information literacy skills in university graduates left them ill-prepared for efficient functioning in the information society. It is only those who are information literate that are able to always find the information needed for any task or decision at hand with ease (Ojedokun, 2007).

The ALA in the Final Report of the Presidential Committee on Information Literacy (ALA, 1989) emphasized the importance of understanding how information is generated, organized and used to the degree that an information literate person could teach others. The transferability of skills is not only expected across disciplines, but also from one person to another. In education, the information literacy standards provide guidelines for design and assessment of IL learning. In this regard, Candy (2002) declares that IL is a key competency that enables learners to master content and extend their investigations, become more self-directed and assume greater control over their own learning. As the ALAôs Committee says, ñultimately, information literate people are those who have learned how to learnò (ACRL, 2000). They know how to learn because they know how knowledge is organized, how to find information and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand (Ojedokun, 2007).

In conclusion, the above studies and others clearly show that college and university education in the 21st century cannot be complete without a strong component of information literacy in their curriculum. This is because the skills IL gives can be applied across disciplines and are

needed in society after graduation for both life and lifelong learning. As Pawley (2003) stated, IL can be considered as a dynamic kind of information that leads to the transformation, of lives. Therefore the learning process is going beyond teaching people to find information to emphasizing the ability to find information, create knowledge from it and use the knowledge for problem-solving. Similarly, Candy (2002) declares that IL is a key competency that enables learners to master content and extend their investigations, become more self-directed learners and assume greater control over their own learning. It is the foundation for independent and lifelong learning, as it multiplies opportunities for students as they interact with a wide variety of information sources and expands their knowledge base (ACRL, 2000).

3.4.3 Information Literacy in other Sectors

Representatives of 23 countries met in 2003 in Prague for a conference sponsored by the National Forum on Information Literacy, together with UNESCO and the National Commission on Libraries and Information Science. The outcome of the conference was the *Prague Declaration* (Thompson, 2003:1), which pronounced information literacy a ñkey to social, cultural and economic development of nations and communities, individuals and institutions, in the 21st centuryò and declared its acquisition as ñpart of the basic human right of lifelong learning.ò The ALA (1989) recognized the critical role of IL in society outside educational institutions and workplaces, by declaring that there was a need to restructure how information was accessed and how that affected peopleôs lives at home.

Commenting on the role of information literacy beyond the academy and workplace, Kirinic (2012) explained that the need for information literacy was continuous in oneôs life. He added that IL was necessary for academic success; to find a job; to effectively manage tasks at a workplace once employed; for lifelong learning and further professional development. The ALA (2006) records that IL achieves the above by ensuring that information literates are able to use available information gateways (libraries and internet) to access information which they are able to analyze and evaluate before using that information to make decisions or create a product. This discussion shows that information literacy is an essential 21st century skill and a foundation for learning (Bundy, 1998; Bruce, 2004).

3.4.4 Goals of Information Literacy Programmes

The ultimate goal of IL programmes reflected in the literature is to develop studentsô ability to find, critically analyze and use information and to be able to extend these skills to new challenges that they will encounter in future (Bruce, 1997, 2003 & Breivik, 1998). The responsibility for information literacy should be understood as that shared among librarians, lecturers and administrators of an institution and not the exclusive preserve of librarians. Goals for an IL programme give focus and guidance for its implementation. The goals should therefore be specific, to ensure that expected learning outcomes are achieved by all students. ACRLôs Best Practices Initiative Institute for Information Literacy (2012: para.10) states that goals and objectives for a successful information literacy programme must be reflective of the mission, goals and objectives of the library and the parent institution must establish measurable outcomes for evaluation of the program; must accommodate input from institutional stakeholders; must present clearly the integration of information literacy across the curriculum for studentsô academic pursuits and effective lifelong learning; must make room for the growth of studentsô skills on a continuum; and must consider all learners connected to the institution, wherever they are, and in whichever mode of study they are enrolled.

ACRLôs guidelines give a framework for establishing IL programme goals that would ensure the success of the programme by encapsulating critical elements in IL training that make it all-inclusive in a learning environment. Ultimately, Bruce (1997) and Breivik (1998) opine that the goal of an information literacy programme is to develop in students that capacity to critically evaluate the information they come in contact with and use the acquired information skills to confidently handle lifeôs challenges. Their perspective perceives IL as empowering students beyond specific disciplines and academic boundaries, to developing lifelong learners. The desire to develop critical thinkers and lifelong learners has been, and continues to be, the desire for many educationists. This includes the American Library Association, whose Presidential Committeeôs Report states that:

> ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them (ALA, 1989:para.3).

Guidelines are critical to the realization of set goals. Consequently, the ACRL (2010:488) has outlined standards to guide psychology IL learning. The purpose of the standards include: helping librarians and psychology faculty in developing IL content for psychology students, facilitate evaluation of IL skills among psychology students and encourage librarian-faculty collaboration in teaching IL components in psychology courses.

Goals in teaching and learning IL need to incorporate aspects of lifelong learning and critical thinking. These two aspects prepare students to desire and be able to learn; and to evaluate information for all purposes and be conscious of implications of its use.

3.5 Pedagogical Approaches of Teaching IL

Pedagogy provides a connection between what students need to know and how they learn. Mokhtar, Majid and Foo (2008:196) investigated the impact of IL teaching incorporating pedagogical approaches on how students applied IL competencies in Singapore. The study concluded that IL competencies cannot be sufficiently learned and applied in a one-time training, but rather close-coaching and guidance was required for students to adequately internalize and practise their IL skills and knowledge, over time. The study revealed that effective IL learning should include specific pedagogical approaches on the part of the facilitators, to make IL teaching more effective, with students being given enough time to practise their learned skills. Moreover, the study also revealed that individual students have different learning styles and this affects how they learn. Teaching approaches must therefore incorporate this understanding in their design on IL instruction.

Teaching IL goes beyond the traditional library or bibliographic instruction that centred on how to use different sources of information effectively (ACRL, 2000). It includes critical and analytical skills regarding the use of information (Albitz, 2007) and ability to discover new information based on existing knowledge and current information. Several IL instruction and assessment initiatives exist in different parts of the world (Rader, 2002; Virkus, 2003). Webber and Johnston (2000:35) studied how students experienced IL in a one-semester credit-bearing course in Scotland and discussed their results using two information literacy models. Their study revealed that an effective IL curriculum design should address *how* a subject is taught as much as it addresses *what* is taught. Content and method of instruction go hand in hand.

Approaches to teaching IL should focus on encouraging students to experience information literacy in a way that enables them to easily apply the skills across disciplines as far as selection, evaluation and application of information is concerned.

Furthermore, ICT has impacted approaches to teaching and learning in higher education and IL is no exception. Bruce (2002) notes that the increase in ICT infrastructure that has been adopted world over and the ease of internet connectivity provide students with numerous learning opportunities. Many universities have computers and internet connectivity that should not be assumed to mean students and lecturers are able to utilize them adequately (Grafstein, 2007). Appropriate pedagogy is required that includes the use of ICTs in teaching and learning IL in order to maximize the use of new technologies to develop information literate students.

Lwehabura (2008) studied the effectiveness of IL delivery in four Tanzanian universities. The findings revealed that the lecture method was a common and widely used teaching method, especially for large groups of students. The study confirmed other methods used in IL instruction as orientation undertaken during the studentsô first week in college, hands-on practicals, web page tutorials, seminars and leaflets. Findings were that the content covered during IL sessions included use of the library and its resources, searching skills and evaluation of sources of information.

Studies by Webber and Johnston (2005) and Webber and Webber *et al*. (2006) on academicsô experience of IL revealed that academics viewed IL as separate from specific discipline content and therefore how it was taught was not their responsibility. Contrary to this view is the study of academic librariansô conception of IL in web-based tutorials. Sundin (2007) found IL manifested key learning pedagogical approaches, including IL, as information sources, IL as skills to use sources and tools, IL as a process of seeking information and IL as using information in a social setting. Sundinôs study revealed that IL can be both the *how* and the *what* of learning, which are both key attributes of learning. Such a premise supports Grafsteinôs (2002) discipline-based approach to IL, which argues IL needs to be a shared responsibility in the institution and not left to the library alone, because *process* is as important as *content* in learning.

3.6 Effectiveness of IL Programmes

Assessment in higher education in general is a much discussed topic in books, journals, conferences, blogs and symposiums. Information competency standards (ACRL, 2002) by the Association of College and Research Libraries have become benchmarks for IL programmes. Discipline-specific standards have been developed. Of interest to this study is the standards for undergraduate psychology students (ACRL, 2010). The IL standards for undergraduate psychology students include performance indicators and outcomes expected from the learners.

As higher educational institutions increasingly embrace IL, assessment must be geared towards effecting change or confirming that the objectives of a given undertaking have been achieved. Pausch and Pop (1997) observe that student assessment is important because it attempts to answer the questions: What should students learn? How well are they learning? And, how does the institution know? Grassian and Kaplowitz (2001) and Maughan (2001) posit that IL assessment is important for demonstration to the university administration and academics that it is effective in improving the studentsô research skills. They further observe that results of assessment initiatives can be a useful tool in support of instruction budgets.

Depending on whether one is assessing what students have learned or how they feel about their own learning, Stec (2004:1) outlines three types of information literacy assessment approaches:

- Prescriptive or diagnostic ï assesses the knowledge and skill of students before training is done. Examples include standard tests and review of a studentôs prior work;
  - Formative ï assesses studentsô performance and provides feedback while the instruction is going on. Resulting from the feedback, the instructor can adjust teaching methods as the course progresses. Examples include writing short reflection/reaction papers to a reading assignment;
  - Summative ï assess what has been achieved and occurs when instruction is complete. Examples include multiple choice questions and essays/self-reflections.

Pausch and Pop (1997) included quantitative and qualitative assessment as important approaches to information literacy assessment. They felt that a complete assessment includes the opinions of learners and descriptions of what they have learned. Nevertheless, Williams

(2004) noted that, however good an assessment approach may be, no single form of assessment can apply to all situations, since each situation is unique.

Empirical studies of information literacy assessment can be grouped according to key areas of instruction. Lindauer, Arp and Woodard (2004) discuss learning environment, information literacy programme components and student outcomes as three critical arenas from where data for information literacy assessment can be harnessed, but observe that these three arenas are not mutually exclusive but overlap, showing the connections and linkages among them. The area of focus for this study was mainly studentsô outcome, which is important for determining effectiveness of IL programmes (Grassian & Kaplowitz, 2001; Knight, 2002; Maughan, 2001 & Radcliff *et al.*, 2007).

De Jager and Nassimbeni (2003), Maughan (2001) and Walsh (2009) outlined specific IL assessment methods to include: quiz test, multiple choice questionnaire, analysis of bibliographies, portfolio, self-assessment, essays, observation, simulation, final grades, focus groups, learning logs and courses in subjects where students synthesize and apply what they have learned. Gross and Latham (2009) applied the testing method using the Information Literacy Test (ILT) developed by James Madison University (JMU), which they found objective in assessing student IL skills and complemented it with interviews. ILT is a computerised multiple-choice questionnaire. Similarly, Dunn (2002) outlined a multi-phased approach to assessment, using detailed questionnaires for surveys. Project SAILS has remained one of the key web-based IL assessment tool (Kent State University Libraries and Media Services. 2007). McGuinness and Brien (2007) and Andretta (2005) observed that the portfolio was popular as an IL assessment tool, even as Sharma (2007) contended that portfolio assessment consumed a lot of time. Coulter, *et al.* (2007), used course grades to study effectiveness of IL programme, but did not find any significant difference, suggesting that good grades may not necessarily mean IL competency. Another assessment found effective is the integration of IL assessment in an academic disciplineôs learning outcomes (Rockman, (2004). Rockmanôs study revealed remarkable improvement in average students in a course that used this approach. Assessment through writing of essays evaluated by use of rubrics is another form of assessing IL. In their study at the University of California, Hoffmann and Labonte (2012)

found the use of writing assignments evaluated by a set of rubrics as an effective way of assessing studentsô IL learning.

3.7 Role of ICT in Information Literacy Learning

According to Ojedokun (2007: xiii), the coming of the information age, with the resultant technology, increased interest in information literacy. McClintock (1996) notes that the major impact of technology on teaching and learning is the change in the learning environment, from a scarcity of information resources to an abundance of information resources. Information literacy becomes critical because of the resultant need to address such issues, including evaluation of the information resources for their validity and authenticity and ethical use. The use of technology in teaching and learning generally opens doors and widens the range of opportunities for passing on information or skills. ICT has impacted society in a myriad ways and Badke (2009) declares that this has transformed the world of knowledge. However, McCormick & Scrimshaw (2001) stress that attention must be given to the impact of ICT on learning before introducing the use of technology in the classroom for effective curriculum change. They present a model to help in assessing ICT impact and postulate that for any positive impact of ICT use in the classroom to occur, there must be a clear change in practice. New technology means preparedness to perform things differently.

In a study of teachersô response to the use of ICT for literacy activities in the UK, Waite (2004) found that ICT was used to get learners to engage in new reading and writing processes, provide a further information source for their research, improve presentation of research and writing work, practise in reading and writing skills, facilitate co-operative reading and writing tasks and facilitate electronic communication with each other, in 1998 and 2001. She found the use of computers and the internet changed the way in which teachers planned their work and so time and technical support is required for the teachers if the initiative is to succeed (Waite, 2004). Before the introduction of computers and the internet, librarians were already involved in information literacy training through bibliographic instruction, courses and talks on how to use the library to find information. The introduction of computers, the internet and electronic resources that are remotely available in the 1990s called for a re-evaluation of lecture-type approaches (Brandt, 2001). Today, many learning environment designs include web-based technologies and therefore knowledge of use of the technologies is critical (Brown 2002:3).

Many institutions consider information literacy as a foundational component of their teaching and learning practices (Bruce, 2004; Maybee 2006; Baro & Zuokemefa, 2011). Various authors agree with the emphasis on information literacy in ALAôs 1989 report, but emphasize that information and information communication technology (ICT) are inseparable. There is thus a need not only to learn how to access and use information, but also understand the technology in which the information operates (Brant, 2001; Ghaznavi, Keikha & Yahgoubi, 2011; Swan, 2011). Brant (2001) adds that effective seeking, evaluation and use of information in a technologically oriented society requires not only appropriate IT skills, but also the conceptual understanding of how the technology works in a broader sense. The ACRLôs Information Literacy Competency Standards for Higher Education states: ñInformation technology skills enable an individual to use computers, software applications, databases and other technologies to achieve a wide variety of academic, work-related and personal goalsò (ACRL, 2000:3). In this regard, information literacy is seen as the over-arching concept enhanced by technology skills.

With increasing online learning comes the need to equip students with skills to search and evaluate information. Online students do not have the time that regular students have to come to the library for IL instruction. Gurney and Wilkes (2008) studied first-year undergraduate students at the University of New England doing applied science, to establish the impact of the libraryôs additional online assistance to an online course they did, with regard to the number of journal articles cited. The findings were that students using the search strategies provided by the library online were more likely to cite more articles and do proper citations, compared to their colleagues who relied on their own searching skills.

As ICTs keep developing and making the information environment complex, players in the information field must be updated and adequately prepared to handle issues as they arise (ACRL, 2001). This understanding led the education department of the province of Alberta to create the ICT curriculum that infused within core courses and programme. The document seeks to introduce students to a broader understanding of the nature of technology, the best way to use it and the impact the use of the technology will have on them and the society in general (Albertan Ministry of Education, 2002). While several authors (McCormick & Scrimshaw, 2001; Waite, 2004; Cooper & Nichols, 2007; Hatlen & Spungin, 2008; Baro & Zuokemefa,

2011) cite the important role ICT plays in IL learning, Waite (2004) agrees with Hatlen and Spungin (2008) that one of the key challenges to the implementation of ICT in IL learning is having teachers that are not conversant with the new technology. Such teachers are not able to fully utilize the pedagogical potential of the technology.

Cole and Kelsey (2004) concluded that computer literacy and information retrieval techniques are both skills that are required to effectively undertake further educational study. In 2000, a group of post-registered nurses and midwives on undergraduate courses completed a self-assessment questionnaire to examine their knowledge and competence of computer and information literacy. The study found that the students deficient in both computer and information literacy. The female respondents had more difficulty in the application of computers in their learning. This agrees with the conclusion of Nielsen *et al.* (1998) that female students in Australia perceived computing as a male domain and this affected their use of the technology.

From their study of university graduates Contreras and Colom (2001) explained that one reason for the difference among sexes on the use of technology could be the way they view and understand relationships between spaces, areas and shapes. This was after a spatial experiment was done on 602 male and female graduates who were all computer literate. The results revealed a higher spatial performance in males than females (Contreras & Colom, 2001). They concluded that this revelation needs to be considered when designing IL curricula that are ICT oriented or ICT dependent. Young (2000) surveyed 462 high school students on their attitude towards computer use. The study revealed great male confidence, compared to their female counterparts. However, this trend was challenged by a later study by Imhof, Vollmeyer and Beierlein (2007), which found the gap between male and female with regard to access, use, motivation and performance negligibly low. By sampling 48 university students, the study noted some gaps with regard to the purpose of use, with men spending more time on computers compared to the female students. Studies by Kominski (1992), Kominski and Newburger (1999) and Dholakia (2007) have also realized the bridging of the gender computer use gap.

3.8. Information Literacy Conceptions and Learning Experiences

Information literacy initiatives in academic settings include a variety of instructional approaches, such as course-related library instruction sessions, course-integrated projects, online tutorials and stand-alone courses (Spitzer, Eisenberg, & Lowe, 1998). This section discusses how information literacy is experienced or perceived by students, lecturers and librarians. In literature, the terms conception, perceptions and experience are often used interchangeably. They are used to refer to peopleôs ways of seeing things, the interaction between people and the object they are interacting with.

3.8.1 Lecturers' Information Literacy Conceptions

Lecturersô conceptions of IL are critical in understanding IL in universities. Although IL for decades has been championed by librarians, it has recently drawn the interest of lecturers, administrators and other role-players in higher education. Gross and Latham (2009) posited that understanding IL conceptions of academics was critical, because the goal of IL is to make students excel and become lifelong learners. Williams and Wavell (2006) investigated how teachers described their studentsô information literacy. The results identified six conceptions of IL by students, namely: finding, linguistic understanding, making connections, practical skills, critical awareness of sources and independent learning. The results of the study indicate that teachers understand IL to be important for lifelong learning, but do not feel able to effectively support the development of IL in their students within their current curriculum environments.

This is not the case in some areas. For example, Rader (2002) investigated information literacy activities at several academic institutions in Ireland and found that some lecturers gave information literacy a very insignificant place in university education. Many lecturers do not know the extent of the gap between what they assume their students know and what they actually do know with regard to finding needed information for their research papers. This finding concurs with McGuinnessô (2006) findings that faculty believe that students will naturally develop IL skills as they do their research and so do not need IL acquisition explicitly stated in the curriculum. Such conceptions deny IL its rightful place in developing the studentsô skills and knowledge of using information.

Although the key role of academics in producing information literate students is acknowledged (SCONUL Task Force on Information Skills, 1999), the academicsô conceptions of information

literacy have been given little attention in the research literature (Boon, Johnson & Webber, 2007). Key among such studies include Bruceôs (1997) study of educators in Australian universities and McGuinnessô (2003) study into Irish academicsô conception of information literacy. McGuinnessô study found that United Kingdom (UK) academics perceived information literacy as being able to quickly and easily access and retrieve textual information; being able to use information communication technology (ICT) to access and retrieve information; possessing basic research skills and ability to use them appropriately; and being able to personally analyze information critically (2003:214-218).

The need to mainstream information literacy into individual subject curricula has been recognized (Lupton, 2004; Nordlund, 2013), alongside the growing need for lecturer-librarian collaboration, widely discussed in the literature (Paglia & Donahue, 2003; Julien & Given, 2003; Allner, 2010; Godbey, 2013; Saunders, 2012). However, collaboration challenges have been noted (Saunders, 2009; 2012), with lecturers feeling reluctant to view librarians as colleagues. They understand and laud the place of IL in learning, but would rather have librarians do what they do best separately and be left to do their part separately, as well. Sounders (2012: 230) found lecturers viewed IL as an essential and critical aspect of a student learning process. With regard to ACRLôs Information Literacy Competency Standardsô outcomes, lecturers are generally in agreement on their crucial role in the studentsô academic life, but do not quite agree on when students should acquire the skills (Gullikson, 2006). Where there was agreement, most faculty felt the skills would better be acquired in their first-year at university or, even better, earlier.

However, looking at the IL concept broadly, the IL conception by lecturers ranges from lower order, emphasizing access and retrieval skills, to higher order, emphasizing autonomous learning, critical thinking and personal development (Boon, Johnson & Webber, 2007).

Whether familiar with the term óinformation literacyô or not, the literature reviewed showed lecturers were in agreement that IL was important for all students and that the students needed to be guided and facilitated to acquire the knowledge, skills and competencies that IL offered. Such a positive view gives IL the goodwill it requires from a critical constituency of the

learning process. What is required are mechanisms to more actively involve the teachers in the process of designing and teaching IL.

3.8.2 Information Literacy Experiences and Conceptions by Students

Approaches to learning are changing, with students being more and more the centre of focus. The growing student-focused approaches to learning have made student learning experiences critical in the assessment of quality in higher education (Ertl *et al.,* 2008; Murray *et al.,* 1990:250). For example, Course Experience Questionnaires (CEQ) are a common instrument in assessing the value and quality of a course or degree in Australian higher education (Ertl *et al.,* 2008), and are available to other institutions, worldwide. Surveys at institutional and national levels have been carried out to evaluate student experiences, as well as institutional quality. Wilson, Lizzio and Ramsden (1997:33) observe that CEQ as a tool is based on ñthe theory of university teaching and learning in which studentsô perceptions of curriculum, instruction and assessment are regarded as key determinants of their approaches to learning and the quality of their learning outcomes.ò According to Coates (2005:33), the National Survey of Student Engagement in the US (NSSE) has played a critical role in helping establish policies and good practices with regard to student engagement in higher education.

Effective learning experiences of students leads to enhancement of quality higher education. Cahill, Turner and Barefoot (2010) studied the academic staffôs experience in enhancing the student learning experience across several disciplines, including nursing, midwifery, radiography, physiotherapy, psychology, pharmacy and life sciences. The study found establishing readiness, connecting with students and the learning environment, played a significant role in enhancing student learning experiences. Establishing readiness included the resources and infrastructure needed to promote and support student learning experiences. Connecting with students included involving them as active participants in the whole learning process, from admission through to graduation, as affirmed by Coats (2005), who observes that student feedback is critical in enhancing effective learning. Effective learning experiences are also a result of conducive formal and informal learning environments. Cahill, Turner and Barefoot (2010:292) pointed out that physical environments needed to support the studentsô learning process and not to allow distraction or disruption of intended learning goals as a result of psychosocial disharmony.

Apart from the difference between groups, students at times rate themselves highly and actually exhibit high confidence levels as they seek information (Gross & Latham, 2009), but given a practical task, the results often do not measure up to their confidence levels. Using interviews to investigate university freshmenôs conceptions of, and experiences with, interacting with information literacy, Gross and Latham found the students not familiar with the term óinformation literacy. Furthermore, the students preferred learning information skills in a different environment from a classroom. The students further showed the desire to gain both the theoretical understanding of the IL concept, alongside the skills that it represented.

Leading in describing the way students experience and conceive information literacy is Bruceôs Seven Faces of Information Literacy model (Bruce, 1997, 2000), which resulted from a phenomenographic investigation of variations in the experiences of information users. In her study, Bruce took a relational approach to understanding undergraduate studentsô experience with information. The study found that information literacy was experienced by students as using IT for communication and information awareness, finding information from appropriate sources, executing a process, controlling information, building up a personal knowledge base in new areas of interest, working with knowledge and personal perspectives adopted in such a way that novel insight is gained and using information wisely for the benefit of others. These experiences differ from one group of users to another in terms of the extent of their applicability (See Section 2.3)

Dabbour and Ballard (2011) conducted a cross-cultural study of IL perceptions and library instruction experiences on undergraduate students at a large American university, targeting Latinos and white students. The study found Latinos scored low compared to their white counterparts on IL knowledge. Despite their low scores, over two-thirds of the respondents agreed that the IL skills they had acquired contributed to their academic success. They further concluded that, although IL instruction needed overhauling in terms of *when*, *where* and *how* it is presented in the curriculum, as well as how it is assessed, it was of great value to students in both ethnic categories.

Similarly, Lupton (2008) underscored the importance of IL learning, when she conducted a phenomenographic study of first-year environmental studies studentsô experience of information literacy in an Australian university. The results revealed three categories of how the students experienced IL, including seeking evidence, developing an argument and learning as a social responsibility (Lupton, 2008:404). These three ways of experiencing IL were, however, found not to be mutually exclusive but having inter-relationships among them and IL.

Building on Luptonôs (2008) findings, a later study found six categories describing studentsô experiences of learning information literacy (Diehm & Lupton, 2012:218):

- Learning to find information
- Learning a process to use information
- Learning to use information to create a product
- Learning to use information to build a personal knowledge base
- Learning to use information to advance disciplinary knowledge
- Learning to use information to grow as a person and to contribute to others

In their study, Diehm and Lupton (2012) sought to discover how undergraduate students approach learning IL and how they viewed learning IL. The study established three methods that students use to learn information literacy: 1) learning by doing; 2) learning by trial and error; and 3) learning by interacting with other people (Diehm & Lupton, 2012:219). Diehm and Lupton further reasoned that, since students use a variety of approaches to learn information literacy, librarians and lecturers needed to collaborate and provide a variety of opportunities; experiences and practice that will encourage students to improve their learning outcomes.

While considering student information literacy experiences in a specific discipline, several studies have used a qualitative approach (Genoni & Partridge, 2000; Lupton, 2004; Osborne, 2011; Diehm & Lupton, 2012; Maybee, *et al.,* 2013). Lupton (2004) sought to establish the information literacy conceptions of undergraduate students enrolled in an environmental studies course. She found students experienced IL as seeking evidence, developing an argument and solving environmental problems. In their study on how doctoral students handled their research data and information, Genoni and Partridge (2000) found that students in a given discipline

have unique research needs that should be addressed specifically in order to have a more successful learning experience. This is further demonstrated by Osborneôs (2011) study of IL conceptions of undergraduate nursing students. Osborne found that IL is perceived as part of a nurseôs professional role in supporting evidence-based practice, although it is context dependent and variable. Webber and Johnsonôs (2000) action research of an undergraduate business IL class found that, as the class progressed, there was less reference to technology and more reference to evaluation, organization and application of information, as part of the studentsô conception of information literacy.

In a study of undergraduate studentsô experience of IL, Maybee *et al.* (2013:17) used a phenomenographic approach and found that students who experienced IL as both learning to use information and focusing on the subject content emphasized meaning-making as resulting from using information. Other students focused only on either learning to use information or the content of the lesson. Seamans (2002) studied how undergraduate students acquire, use and perceive information, using questionnaires and interviews. She found that undergraduate students often did not see libraries as part of their information support network, but embraced technology as a means to learning. This understanding is useful to IL instructors for the design of IL curricula.

This section has revealed that students experienced and conceptualized their IL experience in personal, professional and academic contexts. IL was experienced in several ways, but all these perceived IL as a learning process. The experiences, as conceptualized and practised were varied depending on the nature of the need for information, the resultant type of information needed and the context of the experience.

3.8.3 Information Literacy Conceptions by Librarians

Academic librarians have been instrumental in spearheading, and continue to spearhead, the implementation of information literacy initiatives in universities. Saunders (2009) in a Dephi study surveyed 13 information literacy experts on the future of librarians and information literacy. The study established a number of challenges, but the respondents surveyed affirmed that librarians will still play a pivotal role in IL initiatives in their universities. Davis, Lundstrom & Martinôs (2011) survey show that librarians teaching IL, whether as an integrated

course or for credit, enjoy doing it and identify themselves as teachers. The majority surveyed, however, stated that for-credit courses are more effective than integrated courses. They felt that, being part of the university teaching team, information literacy raises the political importance of the library in the institution (Davis, Lundstrom & Martin, 2011).

A critical area in Library and Information Science (LIS) literature on librariansô conception of IL concerns their relationship with the faculty. Most librarians in Julien and Givenôs (2003) study perceive faculty as key partners in IL, with some requiring the faculty to take the leading role in IL initiatives, and therefore calling on them to be familiar with the library environment. However, the relationship between faculty and librarians was found to require effort to make it work better.

3.9 Information Literacy Initiatives and Challenges in Higher Education

The present study is situated in universities and so this section gives a broad overview of IL initiatives and challenges in higher education. Since the early 1980s, the importance of information literacy in national and regional educational planning has kept growing. Several accrediting organizations and information professional associations have increasingly emphasized the significance of information literacy. This section presents a brief overview of initiatives that affect IL in institutions of higher learning, including the frameworks and standards for IL learning at various levels, and by various stakeholders. This section is divided into six parts. The first deals with initiatives in the United States and Canada, while the second part covers European countries. The third part discusses initiatives in Australia and New Zealand, with the fourth covering Asia. The fifth part discusses initiatives in Latin America and the final part deals with initiatives in Africa.

3.9.1 United States

Information literacy initiatives in the United States (US) have roots in the early seventies and are found at various levels: national associations, state and individual colleges or universities. This research concentrates only on initiatives that specifically address IL in higher education. Since the establishment of the Library Instruction Round Table in 1977 within the ACRL, information literacy has grown to be a well-established learning goal in higher education institutions in the US and Canada (Goff, 2007). State university systems have played key roles in enshrining IL activities in education as a graduation requirement, starting with the California

State University System, in 1983. Others that followed include Texas (TILT ï Texas Information Literacy Tutorial at the University of Texas), Ohio (Project SAILS at Kent State University), State University of New York, Wisconsin and Massachusetts. They have developed online IL tutorials that are available to any willing institution. These efforts are complemented by the numerous IL online learning tutorials by individual universities and associations in support of higher education learning.

At the national level, the ACRL (under the ALA) have built on earlier efforts and developed the Information Literacy Competency Standards for Higher Education (ACRL, 2000). These standards detail how to assess the progress and outcomes of learning information literacy skill, and act as guidelines for partnerships between various libraries and associations. Individual libraries and groups of libraries have developed guidelines and rubrics for IL that fit their situations, but can also be adopted by any interested libraries. The result of co-operation between large universities and Education Testing Service led to the establishment of the National Higher Education ICT Initiative that developed the Information and Communication Technology Literacy Assessment Instrument (ETS/ICT), which is now available countrywide in the US for purchase by higher education institutions. According to Goff (2007:131), the standardization efforts in the US have been greatly boosted by accrediting bodies that have recognized IL as a core learning ability, and require educators to demonstrate how this is achieved, and the coming together of collaborators in the IL movement. Associations like EDUCAUSE primarily seek to enhance higher education by promoting application of technology and information literacy. The co-operation at local, regional and national level among IL stakeholders can be regarded as one key element that has led to the success of the IL initiatives in higher education and other sectors in the US.

3.9.2 IL Initiatives in Canada

The Canadian Literacy and Learning Network forms the national initiative, with several provincial and territorial networks. For lack of their own, universities and academic institutions in Canada have adopted the ACRL standards for their IL initiatives and integrate IL into credit courses (Goff, 2007). Information literacy initiatives for Canadian universities include the Cooperative Online Repository for Information Literacy (CORIL) Listserv that encourages exchange of ideas among IL librarians. The Canadian University Information Literacy

Initiatives (CUILI) wiki is a national movement by academic librarians across Canada, available to all universities. The Ontario Council of Academic Vice-Presidents (2005) offers guidelines for university undergraduate degree level expectations and IL is one of them. Universities are therefore striving to measure up to the expectations of the various bodies in enhancing learning in their institutions.

3.9.3 IL Initiatives in Europe

Like other countries, information literacy initiatives in institutions of higher learning in Europe built on what academic librarians have for many years practised as user education (Association of College and Research Libraries, 1977). Whereas the US and Australian governments have been very intentional in providing guidelines for expected information related skills for students entering the labour market, most European countries have lagged behind. Johnson and Webber (2003) and the Secretaryôs Commission on Achieving Necessary Skills (1991) observe that UK reports on higher education omitted information skills or grouped them within information technology skills. Through professional associations and individual information literacy practitioners, various definitions, models and standards have been advanced in Europe (Bundy, 2004; SCONUL, 1999). Notable early initiatives include the 1994-1997 EDUCATE (End-user Courses in Information Access through Communication Technology) project funded by the European Union, which included universities from Ireland, Sweden, France, Spain and the UK and the DEDICATE (Distance Education Information Courses with Access Through Networks). Both developed information skills courses among participating countries. Horton (2006) and Garner (2006) note that UNESCO and the International Federation of Library Associations (IFLA) are among the international bodies that have supported IL initiatives in Europe, by sponsoring various conferences and national initiatives. A leading European level IL initiative is the Library and Learning Support Working Group (LLSWG), consisting of librarians and information professionals from over 260 universities, that offers regular IL sessions at its annual and international conferences. Regional level initiatives include the NORDINFO for Nordic countries.

At the institutional level, Bruce (2001) observed that the key IL issues include integration of the concept into curricula and the collaboration between librarians and lecturers in teaching information literacy. Consequently, initiatives have been advanced to raise IL discussions from

the library to being a matter for the whole institution (Johnson & Webber, 2003; Webber & Johnson, 2006; Corrall, 2007). They further note the need for practitioners strategically being involved with information literacy initiatives. Following up on the same view, Corrall (2007) investigated levels of strategic engagement with information literacy in UK higher education and found an IL evaluation framework and assessment model for institutional self-appraisal and benchmarking. Studying what other similar institutions are doing with regard to IL may provide a basis for developing a particular institutionôs policies and frameworks. Stubbings and Franklin (2006) observed that many IL practitioners in the UK emphasize the need to embed IL strategies in institutional documents, linking it to educational goals. However, they acknowledge the difficulty this would face to gain acceptance among the academics on various committees (Webber & Johnson, 2006). Corrallôs (2007) study established evidence that there was strategic commitment to information literacy in the UK universities, as reflected in graduate attributes statements and other strategic policy documents.

Britain has the majority of IL initiatives developed for university students. SCONUL (Standing Conference of National and University Libraries), founded in 1980, developed the Seven Pillars of Information Skills model (SCONUL, 1999), that was later developed into the SCONUL Seven Pillars of Information Literacy for Higher Education (SCONUL Working Group on Information Literacy, 2011). These act as guidelines for IL in academic institutions in Britain and Ireland. The revised model by SCONUL defines IL and gives guidelines in training learners in information literacy in Europe and the world over. The Seven Pillars have been exhaustively described in the preceding chapter. The Seven Pillars of the model include: the ability to identify a personal need for information, the ability to assess current knowledge and identify gaps, the ability to construct strategies for locating information and data, the ability to locate and access information and data needed, the ability to review the research process and compare and evaluate information and data, the ability to organize information professionally and ethically and the ability to apply the knowledge gained by synthesizing new and old information and data to create new knowledge and disseminating it in a variety of ways (SCONUL Working Group on Information Literacy, 2011).

Other initiatives in the UK include the Jisc User Behaviour in Information Seeking: Longitudinal Evaluation of Electronic Information Services that seeks to understand university

studentsô information-seeking behavior in UK, Big Blue Project by the University of Manchester and University of Leeds, Leicester University Library guides for both residential and distant learners and EduLib for teachers of IL. The British Open University has also done considerable work in using technology to enhance IL delivery to distance learners, with several web-based IL instructions and tutorials. Many universities have embraced electronic IL initiatives that include Online Public Access Catalog (OPAC) tutorials, virtual tours and information skills tutorials (Stubbings & Brine, 2003). The application of IL in universities varies from institution, to institution with some facing challenges in achieving well developed systems due to lack of active IL practitioners, collaboration among lecturers and librarians and limited resources (Webber & McGuinness, 2007).

In other European countries, Rader (2002) points out that several Scottish and Irish universities have been involved in various aspects of teaching information literacy skills, including Robert Gordon University (www.iteu.gla.ac.uk/IIInfoLit.html), the University of Glasgow and Queens University. However, Rader (2002) also notes that an interview with lecturers from five universities in Ireland revealed IL held a less significant place in higher education. A recent initiative is the Welsh Information Literacy Framework, which seeks to promote the understanding and development of IL in education, the workplace and the general Welsh community (Welsh Information Literacy Project, 2011).

In Germany, a number of universities were involved in IL instruction at various levels and with different approaches, led by the University of Heidelberg and the University of Hamburg. However, Homann (2003) points out that lack of qualified librarians and teachers of IL is a hindrance to the advancement of the initiatives. IL initiatives in the US and Australia have had a strong influence on Swedish efforts (Rader, 2002). An example is the Swedish NORDINFOLIT Group that is a leading initiative in IL. The Chalmers University of Technology has comprehensive programmes for IL that are available online for undergraduate and graduate students.

The Danish Electronic Research Library (DEF) initiative is credited with spearheading IL in higher education in Denmark. METRO is a Danish virtual resource and an example of a product of collaboration between librarians and faculty for guiding students on how to get

relevant resources for their studies (Centre for Teaching Development and Digital Media, 2012). The Finnish virtual university is a state project and IL is at its forefront (Tolonen, 2007). Government support of IL initiatives is also clear in chapter 1, section 9 of the Swedish Law for Higher Education that specifies studentsô ability to seek and evaluate knowledge as an expectation of his or her higher education. In Spain, many university libraries have online IL materials on their websites, including optional courses for credit for information and documentation skills (Virkus, 2003). Encouraged by the Ministry for Scientific and Technical Information, French universities have, for a long time, implemented IL programmes led by the University of Paris. However, Chevillotte (2006) observes that many libraries are individually working on IL tutorials for self-training.

Apart from the SCONUL guidelines in the UK and the Information Literacy Framework for Wales, the Information Literacy Standards for Higher Education by ACRL are widely applied in Finland, Germany and Spain (Homann, 2003). Homann (2003) observes that in Germany and Finland university education seems to be favouring the SCONUL model over ACRL standards that are deemed to be broad ideal statements and not concrete guidelines. The Chartered Institute of Library and Information Professionals (CILIP) in the UK in its comprehensive definition of IL has laid out standards to be met in IL instruction (Badke, 2008).

3.9.4 IL Initiatives in Australia and New Zealand

The concept of information literacy is well explored, understood and applied in Australia and New Zealandôs higher education system. Strategies that have led to the success of IL include intensive engagement at policy and planning levels, implementation, testing and evaluation of approaches that support IL and its integration in educational curricula (Peacock, 2007). Information professionals in Australia have closely connected the concept with the concept of lifelong learning, which has greatly fostered the collaboration between librarians and faculty and enhanced IL teaching and learning (Rader, 2002). Instruction in IL in Australia includes several online tutorials by leading universities, adopted by higher education institutions for individual or group use.

With regard to standards, Australia and New Zealand librarians have developed a comprehensive IL framework adopting the ACRL standards, with two additional sections on

creation of new information and lifelong learning (Bundy, 2004). Specific to the university scene is the Council of Australian University Librarians Information Literacy Standards and Best Practice Characteristics (CAUL, 2004). Several policy statements and guidelines by associations and organizations exist to promote IL in higher education in Australia and New Zealand, led by the Australian and New Zealand Institute (ANZIIL) for Information Literacy, the Queensland University Libraries Office of Co-operation (QULOC) and the Council for New Zealand University Librarians (CONZUL). In spite of these impressive efforts, Peacock (2007) observes that a comprehensive instruction framework is still difficult to attain, even with most universities explicitly and implicitly stating that IL is a core attribute of a tertiary education qualification.

3.9.5 IL Initiatives in Asia

Information literacy in Chinese higher education has been championed by academic libraries over the years (Sun, 2002; Zeng *et al*., 2008). A variety of approaches identified by Zeng *et al.* (2008) in China include special workshops, credit courses and online information literacy instruction. National IL meetings and symposia have increased interest in the concept of information professionals across the country (Rader, 2002). With regard to standards, the Information Literacy Competency Standards for Higher Education in China were approved in 2005 by the Institute of Beijing Academic Libraries (IBAL). The standards consist of seven first-level indicators (Standard), 19 second-level indicators (Performance Indicator) and 61 third-level indicators (Outcome). These give a national point of reference for IL practice in academic institutions throughout China.

Although the concept of information literacy in library and information science literature is fairly recent in India (Babu, 2008), related terms and concepts have existed before. According to Gedam and Agashe (2009), India has several IL initiatives in institutions of higher learning, including seminars and workshops for faculty and librarians, some supported by the government of India and others by international organizations. IL initiatives are supported by an increasingly large number of well-trained information professionals. However, national standards and guidelines for IL in India are yet to be realized.

3.9.6 IL Initiatives in Latin America

Countries in this region with marked IL initiatives in academic institutions of higher learning include Argentina, Brazil, Chile and Mexico. Lau (2007) reports that these initiatives rarely involve IL inclusion in curricula and are scattered from one country to another. Specific IL approaches include use of manuals, flyers, multimedia videos and electronic documents on websites, including online tutorials (Lau, 2001). Others include training programmes for undergraduate and graduate students and faculty on various IL aspects. With regard to standards, the only referred to IL guideline in Latin America are those published in Mexico. A key initiative that sought to describe the concept in an understandable way was the National Meeting of Informative abilities in the University of the Autonomous City of Juarez (UACJ) in 1997 and 1999, which brought together hundreds of librarians in Mexico (Morgan, 2000). Lau (2007) outlines a number of doctoral level IL studies that have been done in Brazil, Mexico and Cuba, to show how extensively the concept has been investigated in some of the Latin American countries.

3.9.7 IL Initiatives in Africa

Information literacy initiatives and developments in Africa are at different levels and vary from country to country. Most universities conduct user education for new students, with a few others developing more formal and structured IL programme (Fidzani, 2007). Conspicuously absent are national, regional or professional associationsô IL initiatives and frameworks, as found in the US, Europe and Australia. User education includes library orientation, library use instruction and introduction to library guides and manuals. Library use courses are usually integrated in general first-year courses, referred to as a communication skills, general studies, information skills or college English (Kavulya, 2003; Idiodi, 2005, Fidzani, 2007). However, it is noteworthy that many African universities host online IL tutorials on their websites and links to other tutorials outside their campuses (Fidzani, 2007: 111). Baro and Zuokemefa (2011) studied IL in library schools to discover whether or not librarianship in Africa was taking the leading role in development of IL in universities. Analysis of their findings revealed that only a few schools had an IL as a stand-alone course in their curriculum.

Studies reviewed revealed that challenges facing IL initiatives in African universities were almost similar from one country to another, including shortage of qualified staff to teach IL, its exclusion from the educational curricula and inadequate funding, (Kavulya, 2003; Dennis,

2004; Idiodi, 2005; Dadzie, 2007, 2009; Baro & Zuokemefa, 2011). Non-commitment by institutions to IL was demonstrated by lack of clear policies on IL, leading to haphazard application of IL initiatives (Kavulya, 2003, Lwehabura, 2008). In a study on the ñuser education programme at the University of Ghanaò, Dennis (2004) found an inadequate number of qualified staff to instruct students during orientation was a major setback to IL initiatives. Similarly, Dadzie (2007), investigating information literacy in Ghanaian universities, found that inadequate staffing, inflexible curricula, poor technological infrastructure and ignorance on what IL is about were key hindrances to IL teaching and learning. Sitima-Ndau (2010) observed that the IL programme at Chancellor College, University of Malawi, was hindered by lack of facilities for students to surf the internet and limited computer literacy among students..

Teaching approaches at most African universities do not encourage the students to find, critically analyze and synthesize information for themselves and this renders IL skills useless for the studentsô academic life (Amunga, 2011). When students do not see the application of what they are taught, they value it less. In like manner, Lwehabura (2007) found lack of institutional commitment as hindering IL initiatives in Tanzanian universities, and suggested mainstreaming IL in the university curriculum as the solution. Mlambo (2010: 29) warns that IL initiatives in higher education in Zimbabwe are becoming critical. She quotes the University of Zimbabwe as a case that has embedded IL in the curriculum and integrated it with a communications skills course which is examinable. Collaboration at national and international levels could see the scenario change in Africa. The Zimbabwe University Libraries Consortium (ZULC) partnered with the Institute of Development Studies (IDS) in a collaborative approach to enhancing IL capacity in Zimbabwean universities. Two workshops conducted under this partnership focused on capacity building for IL trainers and has greatly influenced IL teaching and learning styles in Zimbabwe (Musemburi, Mushowani & Greengrass, 2013).

South Africa has been more active in developing IL initiatives on the continent than any other region. Several institutions of higher learning offer IL-related courses in their curricula for credit in South African universities, even as the education system undergoes transformation and adoption of ICT (Rader, 2002; De Jager, Nassimbeni & Underwood, 2007). This can partly be associated with the evident successful INFOLIT initiative that distinguishes the IL approach in South Africa from other African countries. The INFOLIT project, under the Cape Libraries Co-

operative, supported development of IL in five tertiary institutions in the Western Cape region, but this later spread beyond the initial mandate (Karelse, 1996). A credit-bearing course started by the project is still on-going at the University of Cape Town. In spite of appearing in some strategic plans and policy statements, most South African universities, like the rest of Africa, were found to have little evidence of institutional commitment to information literacy (De Jager & Nassimbeni, 2005:36). However, most universities have a librarian specifically designated for information literacy teaching, often supported by subject librarians.

The situation in Kenya is not any different from other African countries. For Kenya, however, information literacy has been accepted as a development enabler (Tilvawala, Myers & Andrade, 2009). In Kenyan universities, information skills are taught in many universities as communication and study skills (Kavulya, 2003). Amunga (2011:431) found computer illiteracy among students and staff as a major impediment to information literacy efforts in Kenya. She noted that it is not uncommon to find a student having completed a four-year university education and having never stepped into the library (Amunga, 2011:430). The absence or limited exposure to how information can be sought and utilized is one reason for such a trend. However, there are several initiatives by individual libraries and a national consortium aimed at sensitizing and developing IL in Kenyan universities. The Kenya Libraries and Information Services Consortium (KLISC) has organized capacity building workshops for university libraries that focus on information literacy. Another group initiative is the Maktaba Award (Library of the Year Award) by the Kenya Library Association, in conjunction with the Goethe-Institut, Nairobi, and the Jomo Kenyatta Foundation. Among the issues considered by the judges for the Maktaba award include a libraryôs information literacy initiative and ICT usage. Farrell (2007), in a survey of ICT and education, found the need to address information literacy, when implementing ICT in education, critical.

The elevation of information literacy to gain national attention came with its inclusion in the guidelines for university libraries by the Commission for Higher Education, the national accrediting body for university education (Commission for Higher Education, 2007), in Kenya. University libraries are expected to develop IL programmes and participate with lecturers in teaching IL skills to students. In addition, many universities offer user education/orientation programmes as optional or electives (Kavulya, 2003; Amunga, 2011). Conversely, curriculum

design and its implementation, including collaboration between librarians and faculty, are some of the major IL challenges (Kavulya, 2003; Amunga, 2011). An area that is yet to be exploited is the use of online strategies to offer IL programmes, with only a few universities making efforts in this regard.

As much as information literacy is being declared as the key agenda of the institutions, Corall (2007) and Owusu-Ansah (2007) observe that the implementation of IL initiatives is mostly left to unco-ordinated, short, optional instructions, rarely integrated within the university curriculum in Africa. Focus should therefore be on implementation of IL in a way that gives it the centrality it deserves in educational institutions.

3.10 Summary of Literature Review

Various definitions of IL abound in literature, as various IL practitioners and professionals engage the concept from different standpoints. One common understanding in the LIS literature reviewed is that information literacy is a necessary concept for the 21st century and beyond. Throughout the literature surveyed, the importance of IL in academic institutions, workplaces and life demonstrates that the concept is believed as an important part of the current and future generationôs entire life. A discussion of the IL spectrum shows the relationship and understanding of the various concepts related to information literacy. The discussion also shows how the developments in technology are changing the various concepts relating to IL and bringing new ones to the fore. The differences in conception of IL by librarians, students and lecturers discussed are important for the development of effective IL initiatives. The reviewed studies show how the differences may affect the implementation of IL initiatives. Emphasis is on a good lecturer-librarian partnership in IL delivery, to ensure students acquire good IL learning experiences.

Breivik (1998:2) sums up the IL role in education by stating that, ñIn this and next centuries, an ócducatedô graduate will no longer be defined as one who has absorbed a certain body of factual information, but as one who knows how to find, evaluate and apply needed information.ò Literature has shown that the goal if IL is to develop lifelong learners who can adapt to any changing information landscape by critically evaluating information and using it effectively, conscious of its impact. Changes in technology have changed the way universities offer

instruction, including information literacy. Differences in implementation depend on national, regional and institutional policies and budgetary allocations. The overview of IL initiatives in this study is a small representation that demonstrates the fact that much has been done to promote information literacy in higher education, worldwide. The IL initiatives have taken different forms, including stand-alone courses, integration in other courses and on-line tutorials. The discussions around whether to offer IL as a separate instruction or integration into other courses seem to favour integration into individual subjects as a more recent trend that supports librarian-faculty collaboration. The review of the various information literacy conceptions and learning experiences revealed that there was a move to focus on understanding IL learning experiences from the standpoint of the students. Empirical literature has shown IL learning experiences of students, included learning to find information, learning as a process to use information, learning to use information to create a product, learning to use information to build a personal knowledge base, learning to use information to advance disciplinary knowledge, learning to use information to grow as a person and to contribute to others, learning by doing, learning by trial and error, and learning by interacting with other people.

Implementation of modern ICTs in delivering information literacy is growing in many countries, with some being supported by national governments, but a majority being institutional efforts. Availability of the appropriate equipment and knowledge of using them to access information by librarians and lecturers is key to successful implementation of IL on the modern technological stage of higher education. ACRL and other national IL competency standards and frameworks are being translated and adapted across the world. Regions and associations at national level are developing definitions, models and frameworks that are appropriate to their unique contexts and levels of understanding of the information literacy concept. The general focus of the initiatives is empowering the student to be able to find and analyse the information they need to address a given problem.

3.10.1 Gaps in the Literature Reviewed

Although Bruce noted that research in student IL learning experiences greatly informed the design and implementation of information literacy initiatives (Bruce, 1997:157), the present researcher observed from the literature that studies on student learning experiences were generally scarce. According to Bruce, research into studentsô experience of learning

information literacy would strengthen any curriculum developed and expose other learning challenges (1997:157). Some empirical studies on IL learning experiences accessed included Limberg (1999; 2000), Genoni and Partridge (2000), Edwards (2005), Diehm & Lupton, 2012), Maybee (2006; 2007), Lupton (2004; 2008) and Ogunlana, Oshinaike, & Akinbode (2013). Most of the studies addressed IL learning experiences of undergraduate students from an inter-disciplinary perspective, investigating how students perceived information literacy. Studies on IL in specific disciplines such as psychology were even scarcer. Those disciplines represented in the literature reviewed included nursing (Osborne, 2011), English (Seamans, 2002; Vaiciuniene & Gedviliene, 2008), business studies (Webber & Johnson, 2000), and environmental studies (Lupton, 2004).

A search done in leading psychology, education and LIS databases, including PsycARTICLES, PsycINFO, ERIC and Library and Information Science Abstracts (LISA), revealed limited studies on student IL experiences. This created a gap in the literature that the present study seeks to fill. There were few case studies involving psychology undergraduate students (Larkin & Pines, 2004), but they were leaning more on pedagogy than on how the students perceived and experienced learning information literacy. The focus for these studies included collaboration between lecturers and librarians (Thaxton, Faccioli & Mosby, 2003; Paglia & Donahue, 2003; Lampert, 2005; McGuinness, 2006) in teaching information literacy and the challenges that were met in implementing such initiatives. Paglia and Donahue investigated collaboration among psychology and library facultyôs collaborative effort to design, implement and assess an information literacy course. The present author contends that there is a gap in the existing body of research that this study seeks to address.

Whereas there is a growing advocacy for information literacy in higher education in Africa, there is little effort to understand how it is experienced by students. There are limited empirical studies on IL learning experiences in the context of Africa, in general, and Kenya, in particular. This is even more particular with regard to IL in higher education institutions. Finally, most of the reviewed studies concentrated on students in their first year in universities (Lupton, 2008; Hayes-Bohanan & Spievak, 2008; Gross & Latham, 2009) and there are limited empirical studies on those exiting universities into the labour market. The significance of studying students exiting university into the labour market lies in the fact that they are expected to be

ready for the labour market and so they can give a better reflection of the impact of the training received over the years. At the final year also, students are expected to have matured intellectually compared to their entry year and so can give a more reasoned response to issues.

This study therefore makes a contribution in attempting to bridge these gaps and contributing to the information literacy body of knowledge from the perspective of students in the African context. It avails information that could be very significant for information literacy programme developers and instructors, in a manner that meets the ACRLôs Psychology Information Literacy Standards (ACRL, 2010), that aim to:

- Help psychology liaison librarians and psychology faculty design content for IL instruction for students in psychology.
- Make possible evaluation of IL skills of psychology students by stating the expected competencies to be assessed.
- Encourage collaboration between psychology faculty and psychology liaison librarians in the teaching of IL as a component of research methods in psychology
  (Thaxton, Faccioili, & Mosby, 2004)

The usersô perspective that the study presents is a key factor for effective curriculum design.

3.10.2 Bridging the Gaps

Creswell (2002:4) discusses four ways that make research important in addressing problems or issues and searching for potential solutions:

> bridging the gaps in knowledge by investigating an area of research that fills a void in existing information, expanding knowledge by extending research to new ideas or practices, replicating knowledge by testing old results with new participants at new sites, and adding the voices of individuals whose perspectives have not been heard (2002:4).

This study is expected to bridge the identified gaps by providing information on the information literacy learning experiences of students, which is currently limited in the literature reviewed. By providing this information, the study will be expanding knowledge of the area under study, by providing the student voice on information literacy learning. The new knowledge will be used by teachers, librarians and university administration to improve the IL

learning experiences of students, thereby ensuring that the goals of IL programmes are achieved.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

Chapter Four builds on the brief introduction to methodology that was presented in Section 1.10 of Chapter One. This chapter discusses the research philosophy and methodology, procedures and instruments utilised in conducting the study. Key areas covered include research paradigms, research approaches (qualitative, quantitative, mixed methods), research design, population of study, sampling procedures used and data collection and analysis methods and tools. Chapter Four also discusses pre-testing, validity and reliability of instruments and ethical considerations.

4.2 Research Paradigm

The use of the term *paradigm* can be traced to Thomas Kuhn, who used it to describe a cluster of beliefs and dictates, while discussing the history of natural sciences (1962:175). He emphasized the critical nature of paradigms to scientific inquiry and that interpretation of natural history was not possible without some theoretical and methodological beliefs. His use of the term pointed to the shared beliefs and values of a community of researchers of any discipline. Therefore a paradigm is a matrix of beliefs and perceptions that form a particular mind-set. A paradigm shift would therefore mean a change from one way of thinking to another or replacing a worldview with another that happens over time as a result of agents of change (Kuhn, 1996). A research paradigm would refer the thinking or mind-set that guided the research.

Bryman (2004:524) described paradigm as a term whose etymology was the history of science and that it was used to refer to a set of beliefs and dictates for scientists in a particular discipline that influenced what needed to be done, how it needed to be done and how the results would be interpreted to give them meaning. Creswell (2007:19) posits that the different ways that can produce knowledge are distinguished by the different assumptions, paradigms or worldviews that informed them. Kuhn (1970:11) concluded that the establishment of a paradigm in any given field of knowledge was a sign of scientific maturity.

According to Foucault (1972), these mind-sets emerge through conversations and actions of people and are specific to a time and place. Foucault observed that these minds-sets result from daily interactions among people and, in turn, affect how people interact. Babbie (2007:31) explained that whereas theories seek to explain, paradigms provide ways of looking at a phenomenon and do not explain anything. Paradigms provide frameworks that form the basis for the creation of theories. It is therefore a view of reality that consciously or unconsciously, ñdetermines the researchersô starting points and approaches to the field under investigationò (Vorster, 2012:192). In the case of conscious determination an inquirer must choose the appropriate paradigm to underpin the particular study at hand.

Whereas paradigms provide lenses through which the world is viewed (Morgan, 2007:50), research methodologies refer to the scientific approach adopted to study phenomena. On the other hand, research methods refer to the strategies and techniques for doing research. Among the authors who discussed the link between paradigms, methodology and methods are Kinash (2006), Mackenzie and Knipe (2006), Creswell and Clark (2011) and Teddlie and Tashakkori (2003;2009). Kinash (2006:1) stated that a paradigm is a mind-set underlying a research approach that is inherent with power relations and action implications that make it difficult to change. She described methods as the ñtechniques or specific ways we use to collect research data, while methodology is the discipline-specific approaches and processes that utilize these methodsò (Kinash, 2006:2).

Mackenzie and Knipe (2006:para.4) stipulated that, whereas paradigm refers to the way knowledge is studied and interpreted, it is the choice of paradigm that clearly defines the purpose, motivation and desired outcomes of a research. According to Creswell and Clark (2011:39), paradigms are philosophical assumptions or sets of beliefs that guide inquirers. A synonym of paradigm favoured by Creswell and Clark is *worldview*, referring to an all-encompassing way of experiencing and thinking about the world, including beliefs (2011:39). Thinking of paradigm in this way affects the choice of how to study a phenomenon. In a similar study, Lincoln, Lynham and Guba (2011) discussed the different worldviews more extensively. Connecting the three concepts, Teddlie and Tashakkori (2009:21) clarified: ñwhereas a paradigm is a worldview, and research methodology is a general approach to scientific inquiry, research methods are specific strategies for conducting research.ò

The main components of a paradigm include ontology, epistemology and methodology. Ontology is concerned with *being*, that is, how one looks at reality or the nature of reality. This is the starting point of any inquiry. Blaikie (2009:92) defined ontology as ñthe nature of social reality, including what exists, what it looks like, what units it is composed of and how the units interact with each other.ò The second component of a paradigm is epistemology, which is a branch of philosophy concerned with *how* we gain knowledge of what we know. It concerns itself with the relationship between the knower and what is known and how what is known becomes known (Krauss, 2005:759). The third component of a paradigm is methodology, which is concerned with the process of research that is used to know reality. Nespor (2006:123) adds that paradigms go beyond ontology, epistemology and methodology, to encompass ñtensions and conflicts that stretch outside the university to state bureaucracies, pressure groups, big corporations and community groups.ò Mugenda and Mugenda (2003:200) felt that it was possible to discover and describe reality if researchers are able to discover the eternal world. In the same manner, paradigms guide the way in which research is conducted by guiding the researcher on how knowledge can be conceived and analysed to find meaning to its essential features (Terre-Blanche & Durrheim, 2006:2).

The significance of selection of a paradigm for a research project is that it establishes the basis on which methodology, methods and research designs are adopted for the study, based on the philosophical assumptions they subscribe to (Easterby-Smith, Thorpe and Lowe 2002:33). Emphasizing this significance, Easterby-Smith, Thorpe and Lowe (2002:33) observed that the awareness of the philosophical assumptions that lie behind a research project positively affects the quality of the research. The reverse is also true. Paradigms impact the nature of research questions that describe what is being studied as well as the manner in which the study will be conducted (Krauss, 2005:758; Cohen, Manion and Morrison 2007:78). Durrheim (2006:37, 40) felt that understanding philosophical positions in doing research helps in the selection and development of research designs. Paradigms may or may not be associated with a specific discipline or community of scholars, but are anchored on shared beliefs or values of researchers. There are different classifications and perceptions of types of paradigms. Some of the key paradigms discussed in the literature that can inform a mixed method research include constructivist, post-positivist, participatory and pragmatist (Creswell 2007:20; Creswell & Clark, 2011:40). In conclusion, Durrheim (2006:38-39) observed that the choice of a paradigm

to guide research should be guided by the research purposes and objectives and be aligned to the research design adopted. The following section discusses constructivist, post-positivist, participatory paradigms that were found relevant to the study and present the pragmatist paradigm that this study adopted.

4.2.1 Constructivist Paradigm

Constructivist worldview is commonly associated with qualitative approaches to data collection and analysis (Creswell & Clark, 2011:40), with research being shaped from understandings and perceptions of individuals. It is also referred to as interpretive (Easterby-Smith, Thorpe & Lowe, 2002:29) and seeks to understand human experiences and how meaning is constructed as a result of the experiences. According to this assumption, each individual makes meaning or understands the world out of their interaction with their world. Constructivists contend that reality is subjective, because it is a product of peopleôs minds and different people see the same thing differently (Sheppard, 2004:44-45). Emphasis under social constructivism is on understanding peopleôs experience of the world, individually or collectively, including how they feel, think and communicate among themselves (Easterby-Smith, Thorpe & Lowe 2002:30).

The constructivist approach is based upon the perception that ñreality is socially constructedò (Alverson, 2009:15) and the views of participants on the phenomenon being studied are critical (Creswell, 2003:8). According to Sheppard (2004:44-45), constructivists view the world as a social construct of society. Constructionists state that individuals construct meaning socially, through interactions or based on their experiences and views that are mostly subjective, leading to multiple meanings in a research (Creswell, 2007:20-21). Constructivists are therefore concerned with investigating how the social constructions happen. As Cohen and Marion (1994:36) explain, constructivists seek to understand ñthe world of human experience.ò Creswell (2007:20) further observed that the goal of social constructionists is to seek to understand how individuals socially constructed their world, by investigating how objective features of society emerge and how individuals saw them. Although commonly associated with qualitative approaches, which are based on understanding phenomenon (Creswell & Clark, 2007:22), constructivists often employ mixed methods in data collection and analysis because of the nature of human experiences. Unlike the positivists, who begin with theory,

constructivists ñinductively develop or generate a theory or pattern of meaningsò (Creswell, 2003:9) as the research progresses.

The main strength of the constructivist paradigm is the ability to understand how people make meaning of their world by providing a natural way of gathering data (Easterby-Smith, Thorpe and Lowe 2002:32). The focus on a phenomenon by constructivists was observed by Cohen, Manion and Morrison (2007:25) as one that preserves contextual integrity since emphasizing the way individuals being studied think and feel. The cost, in terms of time and resources required to collect data, and the difficulties of analysis and interpretation, have been identified as a disadvantage of the constructivist paradigm (Easterby-Smith, Thorpe & Lowe 2002:32).

The constructivist paradigm was found unsuitable as the lead perspective for the present study, because, whereas it concerns itself with investigating *how* social constructions happen, this study investigates the *what* aspect of social constructions. However, with its emphasis on the nature of reality being socially constructed, this paradigm helped in the understanding of the learning environment, which, in turn, impacts on studentsô IL learning experiences. It enabled the students to individually express their IL learning experiences because of its focus on phenomena.

4.2.2 Post-positivist Paradigm

According to Criswell (2008:6), this approach is called post-positivist, because it represents the worldview after positivism that contradicts the traditional thinking of absolute truth of knowledge, because we cannot be ñpositiveò about our claims of knowledge when studying human behaviour and actions. Post-positivists see the world as ambiguous, variable and multiple in its realities. OôLeary (2004:6) observed that truth for one person or cultural group might not be truth for another, although post-positivists hold a deterministic philosophy anchored on the premise that causes probably determine outcomes (Creswell, 2008:7). In this regard, problems under investigation by post-positivists require a need to determine their causes. Therefore a post-positivist researcher in a scientific study starts with a theory, then finds data that, when analysed, supports or refutes the theory. Post-positivist research is commonly associated with quantitative methods of data collection and analysis. Post-positivist

research also seeks to find meaning and creation of new knowledge needed to enhance social change and operates on the following foundational characteristics:

- Research is broad rather than specialized, and does not arrive at an overall truth ï lots of different things qualify as research (Ryan, 2006:12)
- Theory and practice cannot be kept separate. We cannot afford to ignore theory for the sake of ójust the factsô, because research requires seeing the whole picture (Ryan, 2006:12);
- Objective and extrinsic reality exist but cannot be obtained by the researcher (Tekin & Kotaman, 2013:84);
- The researcherôs motivations for, and commitment to, research are central and crucial to the research enterprise (Schratz & Walker, 1995:1,2);
- The idea that research is concerned only with correct techniques for collecting and categorizing information is now inadequate (Schratz & Walker, 1995:3; Ryan, 2006:13);
- Reality is complex; in order to acquire as comprehensive a grasp on reality as possible, the post-positivist researcher should gather data from multiple sources. (Lor, 2011).

According to Robson (2002:624), post-positivists believe that reality exists and can be known, although probabilistically and with some degree of error. The post-positivism approach therefore requires use of multiple measures and observations because it believes no person can see the world as it really is. By seeking meaning and creation of new knowledge needed to enhance social change, the post-positivists focus was found not appropriate in informing this study, which sought to establish studentsô experiences rather than seeking to enhance social change.

4.2.3 Participatory Paradigm

The participatory paradigm goes by several labels in literature, including: feminist, transformative, emancipatory, critical race theory, neo-Marxist, advocacy and interventionist (Mertens, 2007; Creswell, 2003). The origin of this thinking was in the 1990s, when individuals felt that post-positivist assumptions did not well fit the marginalised individuals in society and issues of social justice were not fully addressed. The need for an action agenda to help the marginalized people was missing in existing worldviews. Participatory worldviews are strongly

influenced by political concerns and tend to associate more with qualitative data collection and analysis approaches (Creswell & Clark, 2011:41). Issues addressed include social justice and oppression of the marginalized in society. Participatory approaches involve a plan that seeks to make positive changes in the lives of participants, institutions and researchers as well (Creswell, 2003:9, 10), by empowering them (Rubin & Babbie, 2008:45). Thus, participants may assist in designing questions, data collection and analysis and finally benefit from the findings. This approach provides the opportunity to have the voice of participants heard, which may lead to reform and change that finally might improve the lives of the participants (Creswell, 2008:9). Participatory worldview therefore focuses on needs of individuals or groups of people who may be marginalized or side-lined in society intending to bring change in their lives for the better (Creswell & Plano & Clark, 2007:23)

The participatory paradigm was found unsuitable as a lead paradigm for this study because its emphasis on seeking to empower participants and researchers is contrary to the focus of this study, which is to investigate the information literacy learning experiences of students. This study focuses less on issues of politics of marginalisation and oppression and this makes the participatory paradigm not suitable.

4.2.4 Pragmatist Paradigm

Researchers can approach their work based on a single or multiple paradigms, depending on the nature of the study in question. In such cases of using multiple paradigms, one becomes primary as the other(s) remain secondary, only providing guidance in particular aspects of the study. This study was underpinned by the pragmatic paradigm as the primary guide. The pragmatic paradigm emphasizes the research problem and allows researchers to use available methods that enable them to address the problem (Creswell, 2009:10), and is usually associated with a mixed methods approach (Creswell & Clark, 2011:41). The pragmatist paradigm is also referred to in literature as *pluralistic* or *problem-centred* (Creswell, 2003:19). Badley (2003:307) noted that pragmatism in an educational research setting does not see results of research as actual descriptions of reality, but, rather, possible connections between actions and consequences.

Creswell pointed out that pragmatism is not fixed on any system of philosophy or reality, which leaves the researcher focused on the ówhatô and óhowô of the research problem (2003:11). Similarly, Badley (2003:300) observed that pragmatists view all forms of inquiry as ways of helping people cope with aspects of the world, with no one approach to research being superior to the other. Badley further noted that pragmatism does not view truth as absolute, but provisional and focuses on the ó*what* and *how'* to research in order to meet the intended purpose, with research outcomes being possible connections between actions and consequences (2003:307). The focus on the research problem releases the study from being limited by provisions of any one given methodology, thereby allowing the researcher flexibility in seeking appropriate approaches that provide insights into the question.

Pragmatists further believe that research is contextual and that historical, social and political aspects must be considered in research (Creswell, 2009:11). The focus on what is being studied and not the methodology gives researchers an easy time to select the most appropriate methodologies for their studies, since the problem is the focus (Falconer & Mackay, 1999). According to Teddlie and Tashakkori (2009:99), the focus on what works and not methodology gives pragmatists the opportunity to apply more than one method to a single study. Morgan (2007) describes abduction, transferability and inter-subjectivity reasoning as the three attributes of pragmatism. Abduction includes moving back and forth when applying induction and deduction reasoning research methods. Transferability explains that methods used in one research can be applied to another context, with or without the possibility of generalisation; and that the knowledge can be transferred and applied in another setting. Inter-subjectivity reinforces the notion that absolute objectivity in research is not tenable and so a researcher using the pragmatist approach must continuously refer to their frames of reference. According to Badley (2003), the pragmatic approach to research leads to a temporary equilibrium, where the researcher reflectively moves from doubt to solution that might generate new doubt. In his view, reflection, which characterizes all inquiry, is a continuous process.

In summary, pragmatism is a problem-focused philosophy of personal experience that encourages people to seek the best ways to achieve their desired goals. Focus on the problem and not methodology or research philosophy allows a researcher to employ appropriate approaches that could lead to possible solutions to the problem at hand. Pragmatism concerns

oneôs response to lifeôs processes, believing that there is no absolute reality, but only possible connections between actions and consequences that are context-specific. In applying pragmatism to the current study the researcher understood that IL learning experiences of students were not fixed and would vary from case to case, and would require different approaches to establish them.

The pragmatist paradigm was found appropriate for the present study because it gave the researcher the flexibility needed to select investigative techniques that adequately addressed all the research questions. For example, the inclusion of quantitative data helped compensate the general understanding that typically qualitative data cannot be generalized. Onwuegbuzie (2003) adds that the triangulation that results from combining quantitative and qualitative findings is a great motivation for such a study. This enabled cross-checking of the consistency of data and facts on specific items, thus validating the data collected. For example, sets of data from lecturer and librarian demographics were used to validate and analyze data from interviews. Data consisting of the participantsô views from interviews and pre-determined data from questionnaires are better merged in a single investigation by use of the pragmatic approach.

According to Tashakkori & Teddlie (2003) and Somekh & Lewin (2005), pragmatism is the paradigm that provides the underlying framework for mixed methods research. For this study the pragmatist paradigm ensured that all the required information was collected by allowing for adoption of the mixed methods approach. Using the pragmatic approach, Belshaw (2011:206) investigated the concept of digital literacy and arrived at eight essential elements of digital literacies from the research literature which can lead to positive action. They include cultural, cognitive, constructive, communicative, confidence, creative, critical and civic elements (see Section 3.3.3, paragraph 4).

Kuhlthau (2004) is among researchers in LIS that have applied pragmatism in relation to information seeking and learning, although her study was not explicitly anchored on pragmatism as a framework. Other researchers that have applied the pragmatist worldview in their studies include Hjorland (1997; 2004), who combined pragmatism with realism in his studies on information seeking, retrieval and knowledge organization in the US. Sundin (2002)

applied pragmatism in studying nursesô information strategies as related to their occupational identities. Pawley (2003) used pragmatism to examine the language librarians used to define and discuss information literacy. Johannisson and Sundin (2007) used the pragmatist approach in studying nursesô information seeking behaviour in Sweden.

4.3 Research Approaches

Choice of methodology and methods for research is largely dependent upon the research questions a particular study sets to address. The three main research approaches or strategies of inquiry (Creswell, 2003:13) in the social science research include: i) quantitative research; ii) qualitative research (Babbie & Mouton, 2001:49; Creswell, 2003:20,21; Mugenda & Mugenda, 2003:155,156); and iii) mixed methods research (Creswell, 2003:20,21; Creswell & Clark, 2007:4; Creswell, 2013:3,4; Greene, 2008:20; Teddlie & Tashakkori, 2009:15). However, Creswell (2013:3) observed that the three approaches should not be viewed as discrete, dichotomous and exclusive, because they can be applied together, with one being more prominent than the other, or a mixture of the two. Differences between quantitative and qualitative approaches include the use of figures (quantitative) and the use of words (qualitative); use of closed-ended questions (quantitative) and open-ended questions (qualitative); and the philosophy behind use of instruments to collect data (quantitative) or observation and questioning (qualitative) (Creswell, 2013:4). The mixed method approach utilizes both quantitative and qualitative data, on the understanding that using both approaches in one study enhances understanding the problem and obtaining better data than either of them (Mugenda & Mugenda, 2003:156; Greene, 2005:275). The following is a brief description of the three approaches, including a rationale for the adoption of the mixed methods approach that guided this study.

The methodological approach applied for the present study included both qualitative and quantitative techniques.

4.3.1 Qualitative Methodology

Various authors (Babbie & Mouton, 2001:4; Sapsford & Jupp, 2006:22; Teddlie & Tashakkori 2009:6; Creswell, 2013:3) have described qualitative methodology as an approach adopted where in-depth investigation is required, involving the collection and analysis of textual or verbal data. The emphasis in qualitative methodology is on words with data collected including

what people *said* or how the researcher described what he or she *saw* or *experienced* (Babbie & Mouton 2001:49,53; Bryman, 2004:542; Denzin & Lincoln, 2005:3; Durrheim, 2006:47). Methods for collecting qualitative data include observation, participant observation or through interviews using an interview schedule (Mugenda & Mugenda, 2003:155). Others include narratives and analysis of documentary sources, artefacts and group discussions (Ritchie 2003:35).

Analysis of qualitative data is inductively done to generate themes that seek to give meaning to the data describing the problem under study. Creswell (2013:4) defined qualitative research as ñan approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problemò, which, according to Leedy and Ormrod (2005:94), uses complex descriptions to describe phenomena. Leedy and Ormrod (2005:94) agreed with Creswell (2003:20) that qualitative research followed a constructivist or participatory approach and added that it also had interpretive or post-positivist leanings. Babbie (2004:53) observed that qualitative methodology was a best-placed approach to study processes, beliefs and perceptions of participants in a study and give them meaning.

Kraus (2005:764) stressed that the value of qualitative investigation is to understand the complex world of human experience and behaviour, as given by the participants. This captures the point of view of the respondents, including their own words. Therefore there must be several interactions between the investigator and the participants throughout the process, to enable the investigator to conceptualize the phenomenon under study and not to impose their ideas on the participants. Similarly, Durrheim (2006:47) observed that qualitative methodology gave more information on people's experiences and perceptions because of the in-depth interviews and data analysis approaches, compared to quantitative methodology. Lieber (2009:219) observed that qualitative approaches take researches closer to the phenomenon being investigated. Krauss noted that, through qualitative data analysis, meaning is constructed in a variety of ways. Bryman (2004:399-404) summarised the main preoccupation of the qualitative researcher to include seeing through the eyes of the people being studied, description and emphasis on context, emphasis on process, flexibility and limited structure and that concepts and theory are grounded in data.

Easterby-Smith and Thorpe and Lowe (2002) observed that qualitative methodology was limited in terms of getting access to private experiences of those under study. According to Bryman

(2004:405), quantitative researchers criticize the quantitative approach as being too subjective and difficult to replicate, often relying too much on the researchers' views about what is significant. Bryman added that the unstructured nature of qualitative research relies too much on the investigator's abilities to make judgements, which make it impossible to conduct a true replication of the study.

The present study found qualitative methodology suitable, as it gave the researcher the opportunity to probe the participants in order to understand their perceptions and feelings. By requiring the researcher to be present at the site where investigation was taking place, this approach also enabled the researcher to compare what was said with what documents were showing and probe participants further.

4.3.2 Quantitative Methodology

Quantitative methodology refers to the research approach that collects and produces discreet numerical data (Mugenda & Mugenda, 2003:156; Sapsford & Jupp, 2006:20). According to Durrheim (2006:47) and Sapsford and Jupp (2006:20), emphasis in quantitative methodology is placed on numbers and statistical data. Creswell (2013:4) observed that the quantitative approach aims to ñtest theories by examining the relationship among variablesò that are measurable.

Techniques in collecting quantitative data include survey methods, experiments (Mugenda & Mugenda, 2003:156), questionnaires, tests/measures and observation (Easterby-Smith, Thorpe & Lowe 2002:130). When we want to establish a general effect of a particular cause, the likely methodology to use will be quantitative (Rubin & Babbie, 2008:62). Surveys include studies that apply questionnaires or structured interviews for data collection, with the intention of generalizing the findings from a sample to the population under study (Babbie, 1990). Experiments include true experiments, with subjects randomly assigned. Strengths attributed to quantitative methodology include production of data that is systematic and standardized, leading to findings that are considered more objectively measured and can be generalised to a broad population (Durrheim, 2006:47; Durrheim & Painter, 2006:132). Lieber (2009:219) observed that quantitative methods were cheaper in terms of data collection and analysis and more confirmatory in nature. Furthermore, Cohen, Manion and Morrison (2007:501) concluded

that statistical analysis of quantitative data easily explains concepts by using numerical analysis and statistical tests.

The present study found the quantitative methodology useful, with the anonymity of respondents ensuring objective responses and thus more reliable data. The results from the quantitative approach were easy to represent in the form of graphs and tables, which made it easy to communicate them efficiently.

Creswell (2003:4) cautioned that current research problems in social and human sciences may not be answered fully by a purely quantitative or qualitative approach; thus the need for a third methodology, the mixed method. Thus, Onwuegbuzie and Johnson (2006) stated that there was a need to develop one that would utilize the strengths of qualitative and quantitative methodologies in one approach. This resulted in the development of the mixed method approach that is discussed below.

4.3.3. Mixed Methods

The mixed method approach is underpinned by the principle of triangulation, which requires a researcher not to overly rely on a single research approach. The researcher employs more than one approach in a single study (Johnson & Christensen, 2008:441; Bryman, 2004:668, 2008:15; Creswell & Clark, 2011:1), in what Greene (2007:20) called, ñmultiple ways of seeing and hearing.ò It could as well refer to using multiple qualitative or quantitative approaches to investigate the same phenomenon (Tashakkori & Teddlie, 2003:10-11). In the mixed methodology, the combination of quantitative and qualitative research approaches involves viewpoints, data collection, analysis and interpretation (Johnson, Onwuegbuzie, & Turner, 2007:123). Greene described mixed methodology as:

> an orientation toward social inquiry that actively invites us to participate in dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished (2009:20).

Johnson and Onwuegbuzie (2004:17) defined mixed methods research as ñthe class of research where the researcher mixes or combines qualitative and quantitative research techniques, methods, approaches, concepts or language into a single study.ò They added that it can be

rightly referred to as the third methodology in research, after the commonly known qualitative and quantitative approaches. Summing up several definitions in the literature, Johnson, Onwuegbuzie and Turner (2007:123) fully agreed with Johnson and Onwuegbuzieôs (2004:17) definition and added a purpose statement, ñfor broader purposes of breadth and depth of understanding and corroboration.ò In this definition the authors looked further than the method and methodological characteristics of the approach to include the rationale and purpose for its adoption. The various definitions are clear that mixed methods research involves philosophical assumptions of both qualitative and quantitative approaches and their various methods of investigating a phenomenon.

Combining more than one research approach was said to offer a better understanding of the research problem, as each approach added a unique perspective to understanding the phenomenon under investigation (Mertens, 2011:195; Creswell, 2013:4). Mixed methodology aims to benefit from the strengths of qualitative and quantitative approaches, while minimizing their weaknesses in a single study (Creswell, 2003:22; Johnson & Onwuegbuzie, 2004:14, 15). Various authors (Mertens, Bledsoe, Sullivan & Wilson, 2010:193-214; Mertens, 2011:195) stressed that, if adopted by researchers, the approach could be useful as a tool for social transformation. Cohen, Manion and Morrison (2007:96) found that mixed methods facilitated collection of data that was more comprehensive and reliable. The mixed method approach yields integrated knowledge that is supported by numbers, images, words and narratives. This gives more deeper and meaningful answers that other methodologies would not be able to give (Johnson and Christensen, 2008:444).

Two main factors that can determine how mixed methods is applied in a given study (Tashakkori & Teddlie, 1998; Creswell, 2003; Onwuegbizie *et al.* 2009; Lopez-Fernandez & Molina-Azorin, 2011:1460-1461) include the weight/emphasis approach, where the researcher gives the same weight to quantitative and qualitative aspects or greater weight to one of them. The second factor is the implementation of date collection/time orientation, which refers to the order in which each method is used to collect data. In this case, the researcher either collects data using both methods at the same time (*simultaneous*), or uses one method first, followed by the other (*sequential*). Whichever method a researcher chooses will have implications for the research design.

Some critics of mixed methods have observed that this approach can be expensive in terms of the time and resources needed to complete the research process (Lieber, 2009:222; Creswell 2003; Creswell & Clark, 2007:10; Johnson & Christensen, 2008:444) and that the investigators might not have the needed skills for a mixed method approach (Mugenda & Mugenda 2003:156).

Among authors who have used mixed methodology in studying student learning experiences is Bowles-Terry (2012), who used the methodology to examine the connections between student academic success and information literacy instruction. She used a quantitative approach and added the student perspective from focus groups to support and fill gaps from the quantitative analysis. She found students appreciated both orientation and discipline-specific library instruction, which made positive differences, as was evidenced in their academic results. Wakimoto (2010) studied how first-year students at California State University learnt and also their satisfaction, in a required IL course using the mixed methods methodology. Results from questionnaires, pre- and post-tests and focus groups allowed in-depth discussions and evaluation and reflection on their IL experience. Kwon (2008) studied the relationship between critical thinking and library use anxiety at the University of South Florida in the United States. Surveys were used to capture library use experience and provide quantitative data, while analysis of student essays provided qualitative data. Results of the study revealed a negative relationship between critical thinking and library use anxiety. IL therefore helped reduce levels of library anxiety and improved critical thinking skills among the students.

Selection of the type of methodology for any research is fundamental and has implications for research design, including sampling, data collection and analysis (Durrheim, 2006:47). Durrheim stated that the decision is informed by the research purpose and the type of data, expected to achieve this purpose. Creswell (2003:21; 2008) noted that choice of methodology depends on the research problem, the personal experiences of the researcher and the audience to whom the report will be presented.

The methodological approach applied for the present study included both qualitative and quantitative techniques. The mixed method approach was found appropriate, because there is a strong move towards using different research approaches to understand information behaviour more clearly (Edwards, 2005:58; Bryman:2006). This researcher adopted the mixed method

approach, where qualitative and quantitative approaches were used to collect data in the same study, to facilitate a deeper understanding of fourth-year psychology studentsô IL learning experiences, as well as enriching the research and making it more inclusive and reliable (Sales & Pinto, 2011:248). By using both qualitative and quantitative methodologies, this study aimed at leveraging on strengths and minimizing weaknesses of both methods (Johnson & Onwuegbuzie, 2004:14, 18; Creswell, 2009). Having adopted the pragmatist paradigm, this study ably applied a mixed methodologies approach, since the choice of methodology depends on the approach that best addresses the research questions (Creswell, 2009:10-11). Various authors, including Howe (1988), and Tashakkori & Teddlie (1998) have insisted that pragmatism is the best paradigm for use with a mixed method approach.

Qualitative methodology captured the participantsô accounts of meaning, perception or phenomenological experiences (De Vos *et al.,* 2011: 65, Babbie & Mouton, 2001:53). Conversely, the quantitative methodology captured statistical and numeric data describing participantsô characteristics, attitudes and opinions.

4.4 Research Design

Every empirical study follows a plan or design. According to Creswell and Clark (2011:53), research designs are ñprocedures for collecting, analyzing, interpreting, and reporting data in research studies.ò Durrheim (2006:34) defines a research design as a ñstrategy framework for action that serves as a bridge between research questions and the execution or implementation of the research.ò The choice of a research design for a particular study depends on its suitability in addressing the research problem, guided by the research questions.

The four broad basic research designs for the mixed methods approach include convergent parallel design, explanatory sequential design, exploratory sequential design and the embedded design (Creswell & Clark, 2011:69-72). In the convergent parallel design, the researcher collects both quantitative and qualitative data during the same phase of the process, analyses both data strands separately and only mixes the results during overall interpretation. The explanatory sequential design occurs in two distinct but interactive phases. First quantitative data is collected and analyzed, followed by the second phase of qualitative data collection based on the results of the first phase. The exploratory sequential design, like the explanatory

design, is sequential, but begins with qualitative data collection and analysis in the first phase and builds to the quantitative data collection and analysis. For the embedded design, the researcher collects and analyzes both quantitative and qualitative data in their traditional designs and adds a strand of either data to enhance the process, as may be appropriate.

This study employed the convergent parallel design. The researcher collected both quantitative and qualitative data during the same phase of the process. Interviews with lecturers and librarians were done more or less at the same period as students were filling in questionnaires. It was also the same time that documentary evidences were collected. Analysis of both data strands were done separately and the results were mixed during overall interpretation of particular aspects of the study. Quantitative data was the first to be analyzed, followed by qualitative data. The analysis of documentary evidence was done last. During interpretation, results from all the three sources that touched on a particular issue were consulted.

4.4.1 Case Study Design

This study adopted the case study design which enabled the researcher to gather data that adequately addressed the research problem, as guided by the research questions. Use of case studies as research designs was popularized by Glaser and Strauss (1967), in their work on Grounded Theory. Several authors agree that the case study is not a method, but rather a way of investigating a phenomenon in its context, choosing what to be studied (Mugenda, 2008:92; Yin, 2013:4; Thomas, 2011:9). According to Simons (2009:21) a case study is:

> An in-depth exploration from multiple perspectives of complexity and uniqueness of a particular project, policy, institution, programme or system, in a ógreal-lifeô context. It is research based, inclusive of different methods and is evidence-led. The primary purpose is to generate in-depth understanding of a specific topic (as in a thesis), programme, policy, institution or system to generate knowledge and/or inform policy development, professional practice and civil, or community action.

Yin (2009:18) defined a case study as ñan empirical inquiry about a contemporary phenomenon (e.g. a ñcaseò), set within its real-world context, especially when the boundaries between phenomenon and context are not clearly evident.ò Still on definitions, Thomas (2011:23) defined case studies as:

> analyses of persons, events, decisions, periods, projects, policies, institutions or other systems which are studied holistically by one or more methods. The case that is the subject of inquiry will be the instance of a class of phenomena that provides an analytical frame with an object ï within which the study is conducted and which the case illuminates and explicates.

The above definitions emphasize the particularity, uniqueness and complexity of real-life situations within which research takes place. The focus is on a unit, or sets of units that are the source of data to be collected. It enables an in-depth, holistic study of a phenomenon. Babbie (2007:298) described the purpose of case studies as either descriptive or explanatory, seeking to understand a phenomenon or providing a basis for the development of a general theory.

Case study is inquiry that is based or focused on one or more cases. The understanding of óa caseô enhances the comprehension of a case study. Yin (2012:6) defined a case as ñgenerally a bounded entity (a person, organization, behavioural condition, event, or other social phenomenon), but the boundary between the case and its contextual conditions, in both spatial and temporal dimensions, may be blurred.ò Thomas (2011:12-13) expounded on the definition of ña caseò, by observing that it is what is óboundedô, a particular instance or happening and the set of events that surround it. This definition brings the aspect of peculiarity and chance, meaning it cannot be a representation of the whole. Thomas discussed a *case* as an argument, reasoning that a case study is all about finding the rationale of one thing as it relates to another, and so involves justifying oneôs conclusions and reasoning.

Multiple case studies involve more than one case and, like the single case approach, can be either holistic or embedded. Holistic designs include single units of analysis, while embedded designs include more than one unit of analysis per case. Yin (2013:61) observes that multiple case designs have great possibility of direct replication, with conclusions from the cases being ñmore powerful than those coming from a single case.ò Evidence from multiple cases is generally considered to have more weight, compared to that from a single case. The present study adopted the embedded multiple-case design comprising lecturers, librarians and students as units of analysis in each case.

In the selection of the case study design, the present research was guided by, among others, the understanding that case studies are generally good in presenting the uniqueness of the object of an inquiry, which makes them best suited for in-depth investigation of the phenomenon (Simons, 2009: 23; De Vos *et al.,* 2011). In addition to offering uniqueness, the case study is ña frame that offers the boundary to your researchò (Thomas, 2011:21). It gives the demarcation for the study, stating the direction and extent you want your study to cover, irrespective of the methods used to do the study. A researcher is able to see the completeness of a phenomenon under inquiry in a case study, because it allows looking at the phenomenon from many different angles. In addition to the above advantages, George and Bennett (2005: 19) observe that case studies also have potential for achieving high conceptual validity through their contextual approach and have the capacity to address casual complexities compared to other designs.

This study found the case study design appropriate, because the cases gave an excellent representation of the IL scenario in Kenya, as provided by the two major categories of Kenyan universities, private and public. There were 22 public universities and 17 private chartered universities in Kenya at the time of conducting the research. The cases chosen for this study were the first two public and two private universities to be chartered, and those offering psychology to undergraduate students, as presented on the commissionôs website (Commission for University Education, 2014). Since only 8 of the 39 universities offered psychology programmes, a selection of four was considered sufficiently representative. Selected cases represented the oldest universities among the public and private, assuming that the older ones were likely to have more established programmes. Different times were set for data collection from each case depending on availability of the informants.

The case study design also allowed the researcher to conduct in-depth interrogation of the phenomenon in the selected cases, leading to information that adequately addressed the research questions. Having adopted the mixed methodology, the use of case study design was found appropriate, as (Yin, 2003) observed, because it allows both qualitative and quantitative data collection. Since this study sought to investigate the information literacy learning experiences of fourth-year psychology students, this design was chosen as it agreed with Mabri (2008:215), who observed that a case study was an important design for investigating peopleôs experiences and perceptions. In their study of teaching and learning of information literacy in

some selected universities in Malawi and South Africa, Chipeta, Jacobs and Mostert (2008) used the multiple-case study design with LIS lecturers, students and library staff being the units of analysis in the various universities. The study revealed that IL was taught as a module at the University of Zululand and as a course at Mzuzu University, and only offered as part of a Library Orientation programme at the Durban University of Technology. Similarly, a study by Kavulya (2003) on challenges facing IL in Kenyan universities investigated four cases and concluded that there was need to build on existing IL efforts by establishing joint faculty and librarian initiatives in IL curriculum design and implementation.

4.5 Population of Study

According to Mugenda and Mugenda (2003:9, 10) and Babbie and Mouton (2001:100), population refers to a group on which the researcher draws conclusions. Kothari (2004:55) defined a population as the sum of things, events or people which a researcher investigates. Babblie (2004:190) defined a population as a sum of elements from which a study sample is selected.

The population for this study consisted of public and private universities that offered psychology programmes at undergraduate degree level. Kenya had, at the time of data collection eight universities offering psychology undergraduate degree programmes, from which four were purposively selected for reasons that have already been given above in Section 4.4.1. A total of 162 fourth-year psychology students from the four universities formed the student population. The fourth-year psychology programme registration lists were used as the sampling frames. According to Sapsford and Jupp (2006:28), a sampling frame refers to whatever is used to identify and give access to individual elements in each sampling unit, referred to as a unit of analysis.

A unit of analysis is described by Babbie (2004:94) as the *what* or *whom* that is being studied, while Easterby-Smith, Thorpe and Lowe (2002:44) and Mugenda and Mugenda (2003:14) stated that a unit of analysis was the entity that made up the basis of any sample. Therefore a unit of analysis could contain an individual or group of people, social artefacts, organizations, institutions and cultures (Easterby-Smith, Thorpe & Lowe, 2002:44 and Durrheim, 2006:41). Social artefacts result from human actions and reveal human interactions. They include

paintings and works of art. According to Durrheim (2006:41) units of analysis are critical to research, since they impact on the selection of samples, data collection and conclusion to be made from the study. The units of analysis in this study were individual students, lecturers and librarians. Where more than one unit of analysis is involved, as in this study, each unit must employ appropriate data collection and analysis methods (Patton, 2002:228).

The lecturers in psychology programmes in the four universities, numbering 56, were included in the study, using the staffing lists that were provided by the respective heads of psychology programmes and departments in the different universities. The lecturers were incorporated in the study to offer their experience and perception of IL, which directly affects studentsô experiences. Being the ones who teach and assess the students, their perspective was found critical in understanding the studentsô responses in this study. A total of 49 librarians from the four universities were included in this study. The librarians in Kenyan universities are the IL champions and those purposively selected for this study interacted directly with the students, as they teach IL and as they serve and assist students in their information needs. They were therefore found critical in giving their perspective, which, like the facultyôs, informs the perception and IL experience of the students. Table 4.1 illustrates the population of subjects within the four universities.

Table 4.1: Population for the study

Name of University	4th yr. Psychology Students	Lecturers in Psychology Discipline	Librarians	Total
University A	48	22	23	93
University B	30	10	9	49
University C	54	16	12	82
University D	30	8	5	43
Total	**162**	**56**	**49**	**267**

4.6 Sampling Procedures

A sample is defined by Babbie (2007) as any portion of the population less than the total. Sapsford and Jupp (2006:26) define a sample as a ñset of elements selected in some way from a

population.ò Therefore sampling refers to ñselecting a part to represent the wholeò (Rao, 2005:263), or cases to observe (Durrheim, 2006:133). Bryman (2004:417) observed that sampling can be done on context or participants. He added that sampling of context came before sampling of participants, especially in qualitative research. According to Durrheim (2006:50), any researcher must justify the choice of the sampling strategy they employ in their study.

There are two major sampling procedures in research: Probability and Non-Probability. In probability sampling, every unit in the population has an equal chance of being selected in the sample. Non probability sampling is used in situations where the sample is selected based on the subjectively judgement of the researcher. The present study applied both purposive and random sampling methods, because they gave the researcher the best opportunity to get the type of data that was needed for the study. The rationale for the choice of each of these sampling approaches is discussed later in this section. Student sample sizes for each university were determined using the Krejcie and Morgan (1970) sample size table for small samples (see Appendix XV). Using this table, population figures were checked against corresponding sample sizes and recorded. Krejcie and Morgan (1970) observed that no calculations are required when using this table. The resultant samples derived for this study are distributed among the various universities, as illustrated in Table 4.2. The total sample for students was 147.

The sampling frame for the students constituted a list containing names of students registered in the Psychology programme during the time of study, which was provided by the departments. In some universities, this list was missing and the researcher used the lists of students registered to take a core fourth-year Psychology course where all final year students were expected. Using the sampling frame identified, a probability sampling technique was applied to select the sample for student respondents. This technique gave each student the same chance of being selected (Creswell, 2013:158). Mugenda (2008:188) observes that simple random sampling is convenient when the sampling frame is small and the population well-defined. Therefore the present study applied the simple random sampling method to gather data from student respondents. According to Durrheim and Painter (2006:135), other probability sampling techniques include systematic sampling, stratified sampling and cluster sampling.

Purposive sampling was used to select the sample for psychology lecturers from each university. Purposive sampling is used when a sample is deemed by the researcher to best serve the purpose of the study (De Vos *et al*., 2011:232; Mugenda, 2008:196), so that units of analysis are carefully selected, based on how best they are placed in answering the research questions and providing needed information (Bryman, 2004: 418; Sheppard, 2004:94; Cohen, Manion & Morrison 2007:114). Bryman further defined purposive sampling as a non-probability sampling, where the researcher does not seek a sample of the participants randomly, but carefully chooses for their relevance to the research questions. Additionally, a non-probability sampling procedure can often be implemented more quickly than probability sampling procedure (Michael, 2011). Purposive sampling was applied to identify lecturers teaching core psychology courses at the time of the study by perusing the timetables at the offices of heads of Psychology departments in the various universities. The sampling frame for lecturers comprised a list of names of lecturers who were teaching in the psychology department at the time of the study. Four lecturers were selected from each university by ensuring that all levels of teaching from first to fourth-year were represented. The total sample for lecturers from the four universities comprised a total of 16 respondents. Once the four lecturers per university were identified, the researcher booked appointments for interviews with the assistance of the office of the head of department for each university.

The final category of respondents was made up of librarians, with the sampling frame being a list of professional librarians availed through the office of the university librarians. Purposive sampling, which is a non-probability sampling procedure, was applied to select those who formed the sample. The Librarians purposively selected included the heads of reference and reader services, instructional librarians or other librarians who directly interacted with students in meeting their information needs. The selected librarians were chosen for their knowledge of information literacy and in many cases are the ones charged with planning and teaching IL.

Among the merits of purposive sampling is the selection of the best sample possible, in the judgement of the researcher or expert, and the convenience of the method. However, purposive sampling is criticised for not being able to represent the entire population, calling on the researcher to be as objective as possible when selecting participants. Furthermore, Johnson and

Christensen (2008:239) observe that the findings from purposive samples are not easily generalized. Four librarians were selected from each university after consultations with the university librariansô office to ensure that those chosen had or were participating in IL training. A total of 12 librarians were selected from all the universities, as shown in Table 4.2.

Table 4.2: Sample sizes

Subjects	University A	University B	University C	University D	Total
Students	43	28	48	28	**147**
Librarians	3	3	3	3	**12**
Psychology Lecturers	4	4	4	4	**16**
Total	**50**	**35**	**55**	**35**	**175**

4.7 Data Collection Methods and Procedures

Durrheim (2006:51) describes data as what forms the basic material that researchers work with. According to Mugenda (2008:284) the purpose of data collection in research is to measure the variables of the study. Creswell (2003:20) explained that the choice of data collection methods was informed by the type of information and data to be collected. Multiple data collection methods and tools were employed in this study, including interviews, use of questionnaires and document analysis.

4.7.1 Survey Questionnaire

A self-administered questionnaire was developed and used to gather qualitative and quantitative data from students (Sapsford & Jupp, 2006:59). The questionnaire utilized close-ended and questions on a Likert-type scale of 1 to five, 1 being ñstrongly disagreeò and 5 being ñstrongly agree.ò Sapsford and Jupp 2006:121) described the Likert scale as an item in a scale that measures attitude or personality, where respondents indicate their degree of agreement or disagreement with a proposition. Babbie (2012:261) clarified that, although questionnaires were mostly associated with survey research, they were common in other approaches, including

experimental, field and other data collection activities. Babbie added that questionnaires were appropriate for the collection of qualitative and quantitative data. The questions were developed partly based on the Association of College and Research Libraries' Information Literacy Competency Standards (2000) and partly guided by the research questions for this study.

The student questionnaire was adapted from the University of Sydney Student Course Experience Questionnaire (SCEQ) and modified to fit the current study. The researcher included questions that respondents would find simple and specific, to gather the information expected for the study, avoiding double-barrelled and long questions (Rubin & Babbie, 2008:202-2004). In addition to the demographics, the questionnaire covered library experiences, teaching and content of IL programmes, computer and IT experiences, learning environments for IL programmes and student gains from IL programmes . Qualitative questions 8-12 on the questionnaire sought to establish gains, challenges the students faced in learning IL and their perception of IL. In agreement with what Stec (2004) observed, the questionnaire was found to be an appropriate tool for assessing studentsô experience concerning information literacy instruction, because it provided a standardised way of getting responses that facilitated quick quantification through the use of the Statistical Package for the Social Sciences (SPSS) for analysis.

Through the office of the heads of the psychology programmes or departments in the cases studied the distribution of questionnaires to students and schedules for interviews for lecturers was planned. The researcher personally participated in distributing the questionnaires and collecting them back in one sitting from three of the cases. In the fourth case, appointment with the lecturer teaching a key IL related course that was identified as having all the fourth year students enrolled, did not easily materialize. However, after the particular lecturer was interviewed, the lecturer agreed to distribute and collect questionnaires from students, which she did. Questionnaires in three cases were distributed at the beginning of a lesson, after the researcher explained the purpose of the exercise and informed respondents that they had the right to choose not to be part of the exercise. In one case, the students had finished their coursework and were doing end of course test. The lecturer allowed the first 20-30minutes of

the time to be used for filling in the questionnaires since this was the last semester for students and missing them would have delayed the data collection process for a longer time.

4.7.2 Interview Questions

In addition to using survey questionnaires, interview questions were prepared, one set for librarians and another set for lecturers. Themes for the interview questions for librarians were guided by the research questions and included understanding of the concept of information literacy, ways IL was taught and assessed, challenges and possible solutions to teaching IL by librarians, impact of ICT on IL and the place of IL in university education . For the lecturers, the themes for interview questions included biographical information, their understanding of the concept of IL, courses they teach that relate to IL, teaching and assessment approaches, ICT integration and impact, challenges of teaching IL-related courses and possible solutions, and the place of IL in university education. Care was taken to ensure that at least one lecturer was enlisted from each year of study through the assistance of the heads of departments and their administrative staff, in the respective universities. The interviews with lecturers and librarians were conducted to allow for in-depth investigation of the phenomenon (De Vos *et al.,* 2011:351).

Appointments with psychology lecturers for interviews went well, except in two universities, where the researcher had to go several times without succeeding to hold the interviews, despite having confirmed appointments beforehand. In one case the researcher made appointments with a lecturer four times and finally the lecturer decided that time was a problem and so pulled out of the study. Since three lecturers had been interviewed, the researcher concluded that those interviewed gave sufficient information.

University librarians were helpful in organizing interviews with specific librarians chosen for the study and the perusal of documents used in IL instruction. Purposively selected respondents were librarians in charge of reference or reader services or instructional services, those who dealt with students and, in many cases, conducted IL on behalf of the library. The challenge with librariansô interviews was in one university, where the university librarian was not easy to find, but after making an appointment a few times the interviews were facilitated. This sought

to establish whether or not the goals of the programme are explicitly stated, the methods of instruction and assessment approaches, the teaching schedules and hand-outs to students.

4.7.3 Document Analysis Guide

A review of the course syllabi and other documents related to the programme was undertaken, in connection with the decision of the researcher to undertake a multiple method approach to data collection. A document analysis guide was carefully developed to capture the statements of goals and objectives of the programmes, methods of instruction, assessment tools, IL teaching schedules and any materials given out to students. One document review form was used for each university. Yanow (2007:411) stated that document analysis was critical in interview or observation-based research, and may corroborate or refute interview or observational data. He added that documentary review ―armedô the researcher with evidence that clarifies or challenges what the researcher is being told. According to Prior (2003:4), documents in most social science research have been marginalized, yet they often carry invaluable information.

4.8 Pre-testing of Data Collection Instruments

The data collection instruments were pre-tested to ensure they produced the expected results. Pre-testing of instruments refers to trying them out on a small number of respondents with similar characteristics to the final sample the study would use (Mugenda & Mugenda, 2003:78, 79). Supporting pre-testing of instruments, Rubin and Babbie (2008: 2011) cautioned that however careful a researcher was in developing a questionnaire, the chances of making errors or having questions that were not clear are high. Various authors agree on the importance of pre-testing to remove ambiguities in the instrument and ensure questions are appropriate and clearly understood (Easterby-Smith, Thorpe & Lowe, 2002: 134; Babbie, 2004:256; Rubin & Babbie, 2008:2011). Ten students, two librarians and one lecturer in psychology programme at the Africa International University were selected as a sample for pre-testing of the instruments, because of their accessibility to the researcher and relevance to the study. The 10 students were those present on the day of the pilot study, out of 12 that comprised the whole fourth-year Psychology and Counselling class at the Africa International University in the 2012/2013 academic year.

A pilot study and data collection instrument pre-testing were done at the Africa International University among the fourth-year Psychology and Counselling students. For a clearer pre-test, all the 33 students in the class were asked to complete the questionnaire. Two librarians were purposively selected for their active participation in information literacy and one lecturer in the psychology department was selected to give the pilot data. The pre-test data was used to establish the validity and reliability of the study, by running regression and correlation tests, as described in section 4.9.1. The pilot study helped the researcher estimate how long filling in each questionnaire would take, as well as how long an interview would take. This was very helpful for planning purposes. For example, the student questionnaires took 15 ï 20 minutes to complete. The interview with one of the librarians took 20 minutes, while the second librarian took 30 minutes. The interview with the psychology lecturer took 30 minutes. From the pilot study, the researcher knew exactly what time to request from the different respondents for participation in the study. The questions in the questionnaire and interview schedules were found to be clear by all respondents, requiring no major amendment or redesigning. Minor corrections included renumbering some of the questions, to make them consistent with the rest of the questions in the questionnaire. This was corrected and accurate numbers given.

The sources of data for each research question are reflected in Table 4.3.

Table 4.3: Mapping research questions to sources of data

Research question	Source of data
1. What information literacy learning experiences do the fourth-year psychology students possess?	Interview, survey questionnaire
2. What are the goals of the information literacy programme at the Kenyan universities?	Interview, document review
3. What pedagogical approaches are used to deliver information literacy to psychology students?	Document review, interview
4. What is the role of ICT in delivering information literacy?	Interview, questionnaire, document review
5. What are the perceptions of fourth-year psychology students towards information literacy?	Interview, survey questionnaire
6. What are the challenges experienced by fourth-year psychology students in learning information literacy?	Interview, survey questionnaire

4.8 Data Analysis

Simons (2009: 117) defines analysis as procedures, including coding, categorization, concept mapping and theme generation, which facilitate organization and interpretation of data in order to produce findings and an overall understanding of the case. According to Mugenda (2008:288), data analysis and interpretation help transform data into knowledge. Since the purpose of research is to develop knowledge, data analysis is critical in any research process. Babbie posited that the purpose of data analysis was to discover the characteristics of data collected and patterns that point to a theoretical understanding of social life (2004:376) and so there was need to combine different data analysis approaches (Babbie & Mouton, 2001).

4.8.1 Qualitative Data Analysis

Qualitative data analysis seeks to identify patterns in data, behaviour, objects, phrases, or ideas that are subjectively identified and interpreted within the context in which they occurred (Leedy and Ormond, 2005: 96). According to Creswell (2007:150), qualitative data collection, analysis and report writing are not distinct processes, but rather are intertwined and take place concurrently throughout the study. Qualitative data that sought to measure the understanding, attitudes and perceptions of students, faculty and librarians was analysed through descriptive/interpretive techniques that included content analysis. This included data from questionnaires and interviews. After gathering the data, the researcher ensured that all the interviews that had been recorded were transcribed. The researcher then read through all the transcripts again, guided by the research questions and objectives, to identify themes describing what the respondents were saying. This included note-taking of preliminary thoughts that were being established.

Detailed analysis followed that included coding. Coding refers to the process of organizing material into groups before inferring meaning from the group (Kohlbacher, 2006). It included assigning headings to the sections that describe the themes that were based on the research questions. Leedy and Ormrod (2005:142) and Kohlbacher (2006) described this type of analysis that is based on themes as content analysis, which they referred to as ña detailed and systematic examination of contents of a particular body of data in order to identify patterns, themes or biases.ò The detailed examination revealed concepts that would help present the information literacy learning experiences of fourth-year psychology students in Kenyan universities.

Data from document analysis was analyzed manually; since there were only four forms filled in that were one page each (See Appendix V). Data from these forms was used to supplement data from interviews with librarians and lecturers.

4.8.2 Quantitative Data Analysis

According to Terre Blanche, Durrheim and Painter (2006: 188), quantitative data analysis is a technique that uses statistical methods to analyse research variables in order to describe data and interpret characteristics of populations under study. They observed that emphasis in quantitative data analysis is numeric data, using a variety of techniques. Large numerical data in quantitative analysis employ the use of software, including the Statistical Program for Social Sciences (SPSS), which make it easy to manipulate (Cohen, Manion and Morrison, 2011:604). Sapsford and Jupp (2006:121) described SPSS as a computerised technique that assesses the correlation between variables and makes it easy to identify groups of variables that are highly correlated if they all measure the same thing. Leedy and Ormond (2005:97) and Teddlie and Tashakkori (2009) described the aim of quantitative data analysis as to reject or confirm a research hypothesis by drawing conclusions about the population under study.

The quantitative data from questionnaires and interviews in this study were analysed using the SPSS, version 20. Descriptive statistics including mean, mode, frequency, standard deviations and regression analyses were generated using SPSS. The function of descriptive statistics is to indicate characteristics that are common to the entire sample and summarize data on a single variable (Rubin & Babbie, 2008:520; Mertens, 2014:419). The data was also subjected to Factor Analysis, using SPSS. Somekh and Lewin (2005:345) define Factor Analysis as a quantitative research technique that identifies the general dimensions or concepts within a set of responses to questions and summarizes the variables into a smaller number of variables that can be interpreted more easily. In the case of mixed methodology, qualitative data is analysed separately and quantitative data also analysed separately (Teddlie & Tashakkori 2009; Creswell & Plano-Clark 2007:128).

The mapping of research questions to data collection and analysis techniques presented in Table 4.4 will aid in the analysis of collected data.

Table 4.4: Mapping Research Questions to Data Analysis Techniques

Research question	Questions addressed in data collection instrument	Source of data	Data analysis techniques
What information literacy learning experiences do the fourth-year psychology students possess?	-Questions 7,8,11,14 in Appendix XI-interview schedule for librarians -Question 9 in Appendix XII ï interview schedule for lecturers -Questions 3,4,5,6,10 in Appendix X- questionnaire for students	-Interview -Document review -Survey questionnaire	-Content analysis -Factor analysis using SPSS -Discourse analysis
What are the goals of the information literacy programme at the Kenyan universities?	-Question 4 in Appendix XI ï interview schedule for librarians -Question 9 in Appendix XII ï interview schedule for lecturers	- Interview -Document review	-Content analysis
What pedagogical approaches are used to deliver information literacy to psychology students?	-Question 7 in Appendix XI ï interview schedule for librarians -Question 6,10, in Appendix XII ï interview schedule for lecturers	- Interview -Document review	-Content analysis
What is the role of ICT in promoting the learning of information literacy?	-Questions 5,6 in Appendix X-questionnaire for students -Questions 3,7 in Appendix XI ï interview schedule for librarians -Question 6,8,10 in Appendix XII ï interview schedule for lecturers	-Survey questionnaire -interview	-Content analysis

What are the perceptions of fourth-year psychology students towards information literacy?	-Questions 2,12 in Appendix X- questionnaire for students -Questions 2,16 in Appendix XI ï interview schedule for librarians -Questions 2,17 in Appendix XII ï interview schedule for lecturers	-Survey questionnaire - interview	-Content analysis -Factor analysis using SPSS -Discourse analysis
What are the challenges experienced by fourth-year psychology students in learning information literacy?	-Questions 9,10 in Appendix XI ï interview schedule for librarians -Question 12 in Appendix XII ï interview schedule for lecturers	-Survey questionnaire - interview	-Content analysis

4.9 Reliability and Validity

Reliability and validity are important concerns with regard to qualitative and quantitative measurements, for they are concerned with measures taken to ensure the truthfulness, credibility and believability of the research findings (Neuman, 2006:188) Credibility of any research depends on whether or not, and how it measures issues of concern. Errors in the tools or techniques of measurement are likely to result in findings that are not a true picture of what was investigated. Sheppard (2004:242) observed that it was not possible to achieve 100% error-free research, because quantitative research must have a standard error inbuilt, while qualitative research faced bias from subjectivity, attitudes and opinions.

In brief, Mugenda and Mugenda (2003:95); Wegenaar and Babbie (2001:66) and Neuman (2006:188) observed that a balance needed to be established between reliability and validity, to ensure quality measurements through appropriate data collection techniques.

4.9.1 Reliability

Reliability in a study refers to the ability of a particular technique to yield the same result each time if applied repeatedly (Babbie, 2007:143; Rubin & Babbie, 2008:180). Mugenda and

Mugenda (2003:95) defined reliability as a measure of the degree to which a research instrument yields consistent results or data, after repeated trials. In research, the ability of the instruments to minimise or allow more errors affects the quality of data collected and consequently the results and their interpretation. In other words, reliability deals with the stability of research instruments to ensure that data collected from the same or similar source at different times, using the same instruments and in the same conditions, will yield the same results (Easterby-Smith, Thorpe & Lowe 2002:135). Although Sheppard (2004:242) posited that reliability and validity were strongly related to quantitative research, Johnson and Christensen (2008:275) stated that both quantitative and qualitative research desired valid and reliable results. However, Rubin and Babbie (2008:181) noted that reliability does not guarantee accuracy.

Furthermore, reliability of the instruments in this study was achieved by testing the instruments in order to minimize errors in their construction (Babbie & Mouton 2001:244). Pre-test results were subjected to Cronbachôs Alpha coefficient measurement and calculated using SPSS to test for internal consistency. From the pilot study, a reliability analysis was carried out for the Likert scale items in the student questionnaire. The regression and correlation test showed a Cronbach's Alpha coefficient of 0.843, well above the threshold of 0.67 recommended by Mugenda and Mugenda (2003) and 0.72 by Yin (2013). From the results of the test it can be concluded that the questionnaire used for this study is a reliable data collection tool. Table 4.5 shows the results of the analysis for the questionnaire.

Table 4.5: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.832	0.848	33

Rubin and Babbie (2008:184) and Mugenda and Mugenda (2003:96) observed that the Alpha coefficient calculation was among the common and reliable ways to measure reliability of instruments used in research. The value of the Alpha coefficient ranges from 0 to 1 and is used to describe the reliability test. Usually, a measurement level of 0.8 or above is considered very good, while a measurement level of less than 0.7 requires that the instruments be modified and

a re-test done until the expected level is attained. Pre-testing was done at the Africa International University. The Africa International University was chosen for pre-testing because it is not among the universities where the actual study was conducted and subjects have similar characteristics to the subjects for this study. Mugenda and Mugenda (2003:186) recommended pre-testing of instruments as a way of ensuring that items in the instruments are clearly stated, understood and elicit the same responses from different respondents. After pre-testing, the researcher modified interview questions in the interview schedules to remove ambiguities and errors in the instrument that could impede quality data collection during the study (Babbie, 2007:257).

4.9.2 Validity

Validity is described as the extent to which the results from data analysed in a study accurately represent the concept under consideration (Mugenda and Mugenda, 2003: 99; Babbie 2007:146). Validity therefore ñestimates how accurately the data obtained in the study represents a given variable or construct in the studyò (Mugenda, 2008:256). Leedy and Ormond (2005:280) posited that validity assesses the accuracy of whether measurements for an attribute collected are really what was supposed to be measured. Validity therefore concerns itself with the quality of research, showing how well the ideas correspond with actual reality (Neuman, 2006:188; Mugenda & Mugenda, 1999). Johnson and Christensen (2008:275) observed that minimising bias was a sure way to achieve high validity in research.

A closer examination of validity threats in quantitative and qualitative research revealed three key types of validity, including internal, external and construct validity (Easterby-Smith, Thorpe & Lowe, 2002:53). According to Leedy and Ormond (2005:97), internal validity is concerned with the extent to which extraneous variables are controlled to eliminate bias and thereby increase researcher confidence in the findings. Threats to internal validity include history, instrumentation, testing, statistical regression, selection, mortality and imitation of treatments (Tredoux & Smith, 175-177; Teddlie & Tashakkori 2009:299). External validity is concerned with generalizability of one studyôs findings to a wider context (Leedy & Ormond, 2005:97; Johnson & Christensen, 2008:267). Mugenda and Mugenda (2003:99-104) explain that external validity shows how findings in a representative sample relate to the target population and tests the extent to which similar results can be obtained at other times with

different settings. Construct validity is concerned with the accuracy of instruments used in data collection and how well results measured fit the theories underpinning the study (Cohen, Manion & Morrison, 2007:138). To address threats to construct validity, Johnson and Christensen (2008:272) and Neuman (2006:194) suggested that a study needs to clearly spell out definitions for constructs of the theories adopted to avoid any ambiguities in understanding.

The significance of validity in research is that accurate data will lead to accurate interpretation of the phenomenon under study. In the present study, validity was ensured through methodological triangulation for collection and analysis of data. The use of both qualitative and quantitative approaches ensured that the appropriate data required for the study were collected. Further validity was ascertained through careful development of questionnaires and interview guides (Easterby-Smith, Thorpe and Lowe 2002:86). These instruments were pre-tested to ensure that the questions and interview guides were clear and well understood. Any ambiguities resulted in re-wording or reconstruction of the instruments. Validity was further achieved by ensuring careful sampling and use of appropriate statistical measurements (Tedlie & Tashakkori, 2009:178-178). Clear definitions and discussions of key constructs of the Seven Faces of Information Literacy as the theory underpinning this study were provided to address the danger posed by threats from construct validity (Christensen, 2008:272; Neuman, 2006:194).

4.10 Ethical Considerations

Ethical issues need serious attention in any research process to ensure that the rights of participants are guarded. Ethical considerations in the research process require observing ethical standards in the planning of the study, methods of data collection and analysis, and use of the results (Mugenda, 2008:293-294; Teddlie & Tashakkori, 2009:199). Ethical issues include the participantsô confidentiality, risks and benefits, purpose of the research, anonymity, privacy, voluntary participation and getting consent to participate (Rubin & Babbie, 2008: 70-80; Mugenda, 2008:293-309).

Confidentiality and anonymity of the respondents and confidentiality of the information were observed throughout data collection and reporting. This was ensured through the use of a clearly written informed consent form, requiring all participants to sign as a show of acceptance

to participate in the study. The respondents were informed that they were part of the study on a voluntary basis and were free to withdraw if they wished, at any point during the study.

This study complied with the University of KwaZulu-Natalôs research ethics policy. Among areas covered on the ethical clearance form included title and location of the study, data collection instruments, informed consent and research approach and methods. A research permit from the Kenya National Council for Science and Technology was sought that allowed the study to be carried out in the four universities in Kenya. Additionally, authority was applied for in writing and granted to do the study in each of the four universities. All respondents in this study were clearly briefed on the objectives, purpose and expected outputs of the study. They were to withdraw from the study at any point if they so wished.

4.11 Summary

Chapter Four focused on the research methodology applied in the study. It explained the research design and described the paradigms that informed the study. The chapter further discussed the rationale for adoption of the pragmatist paradigm for the current study. The chapter described the qualitative, quantitative and mixed methods as the three key methods of doing research in social sciences and pointed to the rationale for adopting a mixed method approach for this study. The chapter also described the study population, sampling procedures, instruments for data collection, approaches for data analysis, reliability and validity of instruments. The ethical implications of the research were presented. The next chapter deals with data analysis and the presentation of findings.

CHAPTER FIVE

DATA ANALYSIS AND PRESENTATION OF FINDINGS

5.1 Introduction

While the preceding chapter presented the research methodology used for the study, this chapter provides the analysis of data and the findings. Section 5.2 discusses the response rate, section 5.3 presents demographic profiles of respondents, section 5.4 presents data analysis guided by themes from research questions. The chapter has the findings organised around the research questions, using descriptive and inferential statistics. The following research questions were addressed:

1. What information literacy learning experiences do the fourth-year psychology students possess?
2. What are the goals of the information literacy programme at the Kenyan universities?
3. What pedagogical approaches are used to deliver information literacy to psychology students?
4. What is the role of ICT in promoting the learning of information literacy?
5. What are the perceptions of fourth-year psychology students towards information literacy?
6. What are the challenges experienced by fourth-year psychology students in learning information literacy?

5.2 Response Rate (N=158)

Out of a total of 147 questionnaires administered, 130 were returned, giving a response rate of 88.45%. Twenty seven interviews were conducted out of the expected 28. The overall response rate from questionnaires and interviews was 89.7% (157/175*100). The response rate far exceeds another similar previous study, where the average response rate for academic studies was 55.6 per cent (Baruch, 1999). Mugenda and Mugenda (1999) assert that a response rate of 70 per cent is excellent for analysis and reporting.

The drop-and-pick method was used to collect completed questionnaires, including personal face-to-face visits, and follow-up by telephone calls and by email to explain the importance of

the study and its usefulness. This follow-up process improved the response rate substantially. The fact that the researcher personally participated in delivery and collection of questionnaires to students in one sitting also played a key role in the high response rate. The high response rate was a result of the support the researcher received from university librarians and heads of psychology departments in the four universities. The letters giving the researcher permission to conduct research from the offices of the Deputy Vice-Chancellors in charge of academics and research in each university were very helpful in ensuring successful data collection.

Some respondents declined to fill in the questionnaire, giving no reason for their action. The results presented in Table 5.1 and Figure 5.1 illustrate the response rate for the various respondents. All the librarians targeted were reached for interviews. Of the sixteen lecturers targeted for interview, fifteen were reached. As already pointed out, of the targeted 147 students, 130 completed the questionnaires and returned them.

Table 5.1: Population Sample and response rate

Subjects	Distributed (N=175)	Responded	Percentage
Students	147	130	88.4
Lecturers	16	15	93.75
Librarians	12	12	100
Total	175	157	89.71

5.3 Demographic Data Analysis

This section provides a summary of the demographic data for the participants in the study. The study sought to establish the profile of the different groups of respondents. The data sought from students included gender, institution where they studied and mode of study (whether part-time or full-time). Demographic data on lecturers included affiliate institution, level at which they taught, gender, academic qualifications, official title and work experience. The librarians in the study were required to give their gender, academic qualifications, work experience and affiliate institution. The results of the demographic data analysis are illustrated in Tables 5.2-5.7.

5.3.1 Profile of students

The basic characteristics sought about the students included gender, affiliate institution and mode of study (part-time or full-time). The findings revealed that the fourth-year psychology students were mainly female 92 (71%), with the rest 38 (29%) being male. There were more students (56%) studying full-time than part-time (44%). Figure 5.1 shows the student responses by gender.

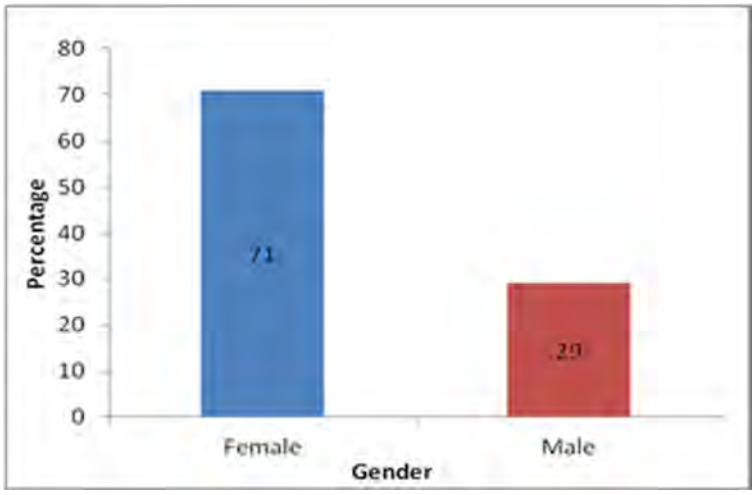

Figure 5.1: Student Responses by Gender (N=130)

5.3.1.1 Institutional Affiliation

The student respondents were also required to indicate their affiliate institutions. The distribution of the students in terms of their institutions was as follows: 34 per cent were from University A and 12 per cent from University B; University C had the majority at 35 per cent, while University D had 19 percent. The distribution of students by institution is shown in Table 5.2.

Table 5:2: Distribution of Students by Institution (N=130)

Institution	Frequency	Percentage
University A	45	34
University B	15	12
University C	46	35
University D	24	19
TOTAL	130	100

5.3.2 Profile of the Lecturers

Of all the lecturers interviewed, University A provided 20.2 percent, while Universities B, C and D constituted 26.66 percent each, respectively.

5.3.2.1 Level of Teaching

The highest numbers of lecturers were teaching at level 2, while levels 1, 3 and 4 each had 13 lecturers teaching at these levels. These findings suggest that all lecturers were in a position to assess IL skills of students, since they interacted with students at all levels.

5.3.2.2 Gender Profile of Lecturers

This study required the lecturers to state their gender, in order to establish their gender profile. The findings were that psychology lecturers were mainly female (66.7%), with the rest (33.3%) being male. These findings are in congruence with the findings of Michalski *et al.* (2011), findings in a study of psychology doctorate holders in employment in the US. Their study revealed a higher female employment rate (75%) compared to that of males (35%). These findings reveal that the gender ratios of training in the present study (see Section 5.3.1) resemble the ratios of employment in the psychology discipline in the US. The results presented in Figure 5.2 illustrate the gender distribution of lecturers.

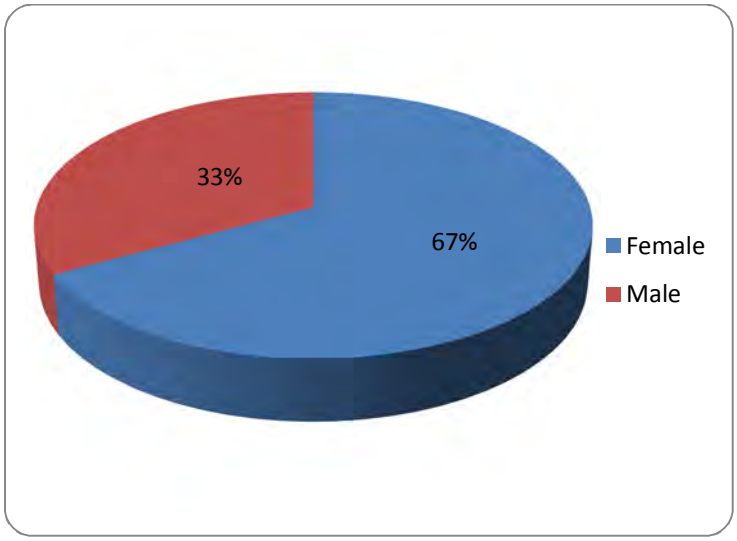

Figure 5.2: Gender Profile of Lecturers

5.3.2.3 Academic Qualifications of Lecturers

With regard to academic qualifications, lecturers were asked to state their highest qualification. The findings in Table 5.3 show 46.7 per cent of the respondents had a masterôs degree, while

the rest (53.3%) had a doctoral degree. Further probing of the respondents who had mastersô qualifications revealed that they were all PhD candidates in different institutions and were at different levels in their studies. The results indicate that the respondents were well qualified to teach at university level. The academic qualifications of lecturers are shown in Table 5.3.

Table 5.3: Academic Qualification of Lecturers (N=15)

Academic Qualification	Frequency	Percentage
Masters	7	44.7
Doctoral	8	53.3
Total	15	100

The researcher asked the lecturers to state their designations. The findings were that there were more senior lecturers (66.7%) than lecturers (33.3%), perhaps suggesting that the quality of staff teaching psychology students was high.

5.3.2.4 Work Experience

With respect to years of teaching experience of the lecturers, majority of the lecturers 6 (37%) had taught for between six and ten years. Another 2 (13%) had teaching experience of between one and five years, and 2 (13%) had taught for between eleven and fifteen years. The findings showed that another 2 (13%) had been working for sixteen and twenty years. The longest serving lecturers were 3 (19%), who had worked for over twenty one years.

On average, lecturers were well experienced in teaching. Table 5.4 summarizes the findings.

Table 5.4: Working Experience of Lecturers Teaching Psychology Students (N=15)

Work Experience (Years)	Frequency	Percentage
0-5	2	13
11-15	2	13
16-20	2	13
6-10	6	37
Above 21	3	19
Total	15	100

5.3.3 Gender Profile of the Librarians

The respondents were required to indicate their gender. The findings revealed that the reference/user services librarians were mainly female. The results in Figure 5.3 indicate that 57 per cent were female and 43 per cent male.

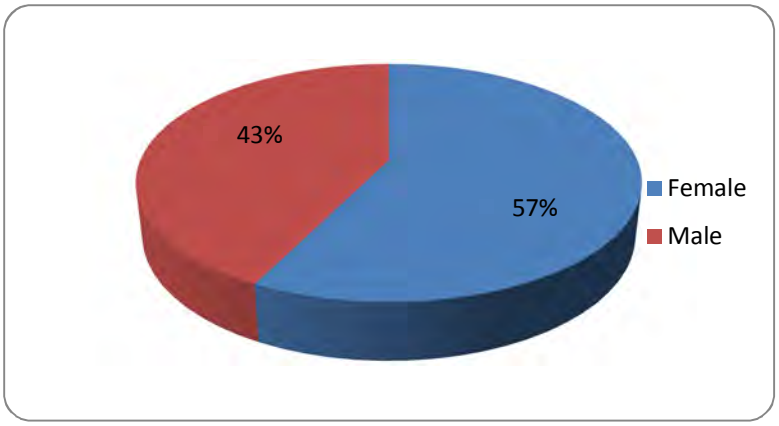

Figure 5.3: Gender Profile of Librarians

5.3.4 Academic Qualifications of Librarians

With regard to academic qualifications, librarians were requested to indicate their highest qualification. This question was meant to establish whether their qualifications were commensurate with their positions of teaching IL to fourth-year psychology students. As Table 5.5 shows, 11(92%) of the respondents had a masterôs degree, while none of them had a doctoral degree. Only 1(8%) had a bachelorôs degree, but with over 20 years of relevant working experience. With the majority holding a masterôs degree, the result suggests that they were qualified to teach at the university. The results are further illustrated in Table 5.5.

Table 5.5: Academic Qualifications of Librarians (N=12)

Academic level attained	Frequency	Percentage
Bachelors	1	8
Masters	11	92
Doctoral	0	0
Total	12	100

With respect to years of working experience of the librarians, the results illustrated in Table 5:6 show that the majority of librarians, 5 (44%), had worked for over 21 years. With the exception of 1 (8%) of the librarians, who had a working experience of between 1 and 5 years, 2(16%) had worked for between 6 and 10 years. Another 2(16%) had been working for between 11 and 15 years. Finally, 2(16%) of the librarians had been working for between 16 and 20 years. On average, librarians were relatively well trained and experienced to deliver IL programmes to psychology students.

Table 5.6: Years of Experience of Librarians (N=12)

Work Experience	Frequency	Percentage
0-5	1	8
6-10	2	16
11-15	2	16
16-20	2	16
Above 21	5	44
Total	12	100

5.4 Data Analysis Based on Themes from Research Questions

This section provides a summary of the results of the study that was conducted to investigate the information literacy learning experiences of fourth-year psychology students. Both quantitative and qualitative data were analysed under themes and sub-themes from particular research questions. Including gains students obtained from learning IL and library experiences

5.4.1 Gains obtained from learning information literacy

Participants were asked to respond to closed-ended questions in a Likert scale that sought to establish the benefits they gained from learning IL on a scale of 5 to 1; strongly disagree, disagree, neutral, agree and strongly agree, respectively. The results in Table 5.7 show that the most important gain by students from learning IL was how to organize and be responsible for their own learning (mean 4.28). This was followed by the response that students gained critical thinking and problem-solving skills (mean 4.26). The third significant gain was good written communication skills (mean 4.18) and being able to integrate new information into an existing body of knowledge (mean 4.02)

Table 5.7: Gains from Studying IL: Descriptive Statistics (N=130)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S/D	Analysis N
As an individual, I am able to define my information needs	3	5	30	55	37	3.82	0.919	130
I can integrate new information into an existing body of knowledge	1	3	17	70	41	4.02	0.787	130
I can use information for critical thinking and problemï solving	0	2	9	66	53	4.26	0.688	130
I can organize and be responsible for my own learning	1	2	14	49	64	4.28	0.845	130
I can communicate knowledge and ideas effectively	1	4	17	60	48	4.13	0.820	130
I feel confident about tackling unfamiliar problems	5	3	32	47	43	3.83	0.949	130
I can track down and use information in different formats	0	6	25	68	31	3.89	0.809	130
I have information technology /computer skills	0	3	12	56	59	4.18	0.785	130
IL has stimulated my enthusiasm for further learning	3	2	36	50	39	3.89	0.909	130
I have good written communication skills	1	0	16	25	88	4.25	0.740	130

Majority of the students 113 (87%) also indicated that IL learning had enabled them gain good written communication skills. A factor analysis was carried out with the Kaiser-Mayer-Olkin (KMO) test of specificity on studentsô gain from learning IL. The KMO test of measure of sampling accuracy value of 0.874 suggested that the matrix was statistically significant, with a p-value of 0.000, and 45 degrees of freedom. P is less than 0.05. The KMO test is a measure of validity which tests the relationship between items in a Likert scale. The result must produce alpha of over 0.5 in order to be considered adequate for inference (Dziuban & Shirkey, 1974). In this study, a result of 0.874 alpha was therefore an adequate indicator that relations between the items were well measured. The results are given in Table 5.8**.**

Table 5.8 Gains from Studying IL: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.874
Bartlett's Test of Sphericity	Approx. Chi-Square	551.180
	Df	45
	Sig.	0.000

Table 5.8 Gains from Studying IL: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.874
Bartlett's Test of Sphericity	Approx. Chi-Square	551.180
	Df	45
	Sig.	0.000

a. Based on correlations

Using the Principal Component Analysis, two principal components on

gains from studying IL were extracted with the Varimax with Kaiser Normalization rotation method, as illustrated in Table 5.9.

Table 5.9: Gains from Studying IL: Rotated Component Matrix (N=130)

	Raw		Rescaled	
	Component		Component	
	1	2	1	2
As an individual, I am able to define my information needs	0.054	0.828	0.059	0.901
I can integrate new information into an existing body of knowledge	0.395	0.445	0.502	0.566
I can use information for critical thinking and problemï solving	0.469	0.212	0.682	0.308
I can organize and be responsible for my own learning	0.467	0.458	0.553	0.542
I can communicate knowledge and ideas effectively	0.628	0.197	0.765	0.241
I feel confident about tackling unfamiliar problems	0.814	0.049	0.858	0.051
I can track down and use information in different formats	0.538	0.246	0.665	0.304
I have information technology /computer skills	0.495	0.269	0.630	0.342
IL has stimulated my enthusiasm for further learning	0.363	0.455	0.399	0.501
I have good written communication skills	0.403	0.284	0.545	0.384

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Results in Table 5.9 illustrate that in component one the most important gain was confidence in dealing with unfamiliar problems (0.858), which led to the ability to communicate knowledge and ideas effectively (0.765) and used information for critical thinking and problem-solving (0.682) and could track down and use information in different formats (0.665). In component two the students could do well if they defined information needs (0.901), because they could integrate new information into an existing body of knowledge.

The scree plot (Figure 5.4) revealed the presence of two principal components, with eigenvalues exceeding 1, explaining 33 per cent of the variance and 2 explaining 10 per cent of the variance. An inspection of the scree plot revealed a clear break after the second principal component.

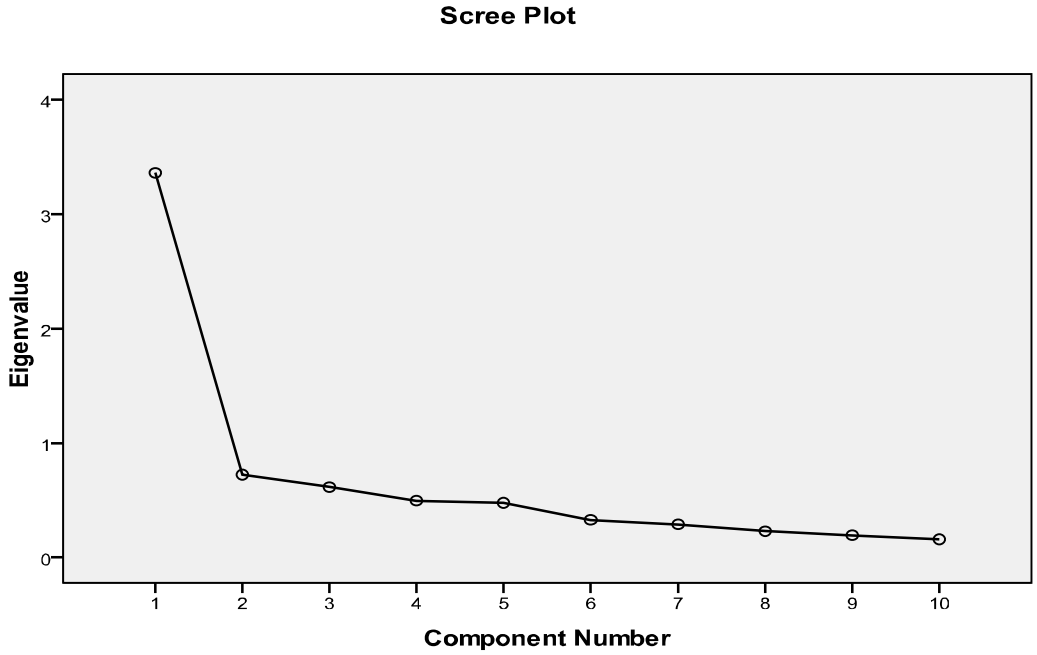

Figure 5.4: Gains from Studying IL Scree Plot

Respondents were required to state additional gains they had obtained from learning information literacy in an open-ended question that collected quantitative data. The aim of the question was to establish further tangible benefits respondents associated with learning IL. This question gave them an opportunity to freely express their feelings. Some of the students 35 (26.9%) did not respond to the question. Table 5.10 provides a summary of the findings from 95 (73.1%) of the responses.

Table 5.10: Further Gains from Learning IL (N=95)

IL Learning Gains	Frequency	Percentage
Critical thinking skills	20	21.1
Exposure to sources of information	13	13.7
Socialization and effective communication skills	12	12.6
Confident to handle information-related issues	10	10.5
Competence in information access	10	10.5
Enhanced knowledge in information handling	7	7.4
Doing research	6	4.6
Problem-solving skills	4	6.3
Computer skills for accessing and gathering information	4	6.3
Desire to learn/know more	3	4.7
Information sources and referencing	2	3.2
Employment	1	0.8
Ability to integrate it with oneôs career	1	0.8

According to the results presented in Table 5.10, the common gains students said they obtained from learning information literacy were mostly linked to research. Most of the students indicated that IL had impacted their research ability by empowering them with critical thinking skills that enabled them use the various information sources they came across in order to realize credible term papers and research reports. The gains from IL were ranked as follows in decreasing order of frequency: critical thinking skills was the highest with a frequency count of 20 (21.1%), followed by exposure to information resources 13(13.7%) and socialization and effective communication skills 12 (12.6%). Critical thinking skills are important if students are to achieve high academic levels and personal success, where they look beyond the face value of words to establish meaning, connections and finally come up with conclusions that help solve a problem. The lowest ranked gains were *ability to integrate IL with one's career*, *understanding of different cultures* and *employment.*

5.4.2 Library Experiences

On a 5-point Likert-type scale, respondents were required to indicate the extent to which they agreed or disagreed with the listed library experiences. Descriptive statistics were generated with means and standard deviations, as shown in Table 5.11.

Table 5.11: Library Experiences: Descriptive Statistics (N=130)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S/D	N
There is need for more student-librarian interaction	5	5	26	54	40	4.28	.974	130
I use the library resource for my term papers and general information needs	5	22	26	51	26	3.89	1.029	130
I can find and use various library resources like books, journals, videos	7	8	23	58	34	3.74	1.075	130
I know how to get specific titles easily, using online library catalogues	10	17	33	43	27	3.52	1.094	130
Our library resources are appropriate for my information needs	4	4	10	41	61	3.48	1.183	130

The results in Table 5.11 showed the average mean for library experiences as 3.78. The high rankings for the need for more student-librarian interaction, with a mean score of 4.28, was followed by using the library resources for term papers and general information needs (3.89) and finding and using various library resources like books, journals and videos (mean 3.74). Getting specific titles easily, using online library catalogues, had the lowest variability, at a mean score of 3.52.

The study aimed to test the role of library experiences in information literacy learning by fourth-year psychology students. The KMO test of specificity is a statistical test which tests the inter-item validity of a group of similar items subjected to the same Likert scale. If the result of a KMO test is below 0.5, then there is no relationship between items and the validity is questionable (Dziuban & Shirkey, 1974). A KMO value of less than 0.5 would require a remedial action that could be deleting the offending variables or introduction of new variables, with relation to the offenders. If the KMO test value is above 0.5, then a factor analysis is carried out. Table 5.12 shows the findings.

Table 5.12: Library Experiences: KMO and Bartlett's Test (N=130)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.635
Bartlett's Test of Sphericity	Approx. Chi-Square	60.772
	Df	10
	Sig.	0.000

The KMO test of measure of sampling accuracy value of 0.635 in Table 5.12 suggests that the matrix was statistically significant, with a p-value of 0.000, which is less than 0.05.

A factor analysis was carried out to determine which among the listed library experiences were the most important and most valued experiences by the students. Factor analysis will usually divide the items into groups called principal components, based on their relevance (factor loadings) and lists them according to weight, called communality (Dziuban & Shirkey, 1974).

In Table 5.13, the principal component analysis showed that the response that library resources were appropriate for studentsô information needs was the most important library experience (0.764), followed by the fact that the students were able to find and use the various information resources like books, journals and videos (0.694). The library was still a desired physical place for students to do their term papers and complete other information needs (0.631).

The second of the most important library experiences was that *there is need for more student-librarian interaction (0.912)*. The meaning of factor one is that if libraries provided the appropriate resources and direction on critical issues, then the assumption, factor two, indicates that student-librarian interaction will provide the necessary experiences,

Table 5.13: Library Experiences: Rotated Component Matrix[a] (N=130)

	Component	
	1	2
I use the library resource for my term papers and general information needs	0.631	0.024
I know how to get specific titles easily using online library catalogues	0.590	0.506
I can find and use various library resources like books, journals, videos	0.694	0.206
Our library resources are appropriate for my information needs	0.764	0.097
There is need for more student-librarian interaction	0.099	0.912

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in three iterations

Results in Figure 5.5 revealed the presence of two principal components, with eigenvalues exceeding plot explaining 19 per cent and 11 per cent of the variance, respectively. An inspection of the scree plot revealed a clear break after the second component. Out of the five factors considered, Varimax analysed and came up with two components which are the most important as far as the perception of the respondents was concerned. In the research findings, these two components should be emphasized because of their importance. To demonstrate the importance of these two factors, a scree plot was drawn and the factor loadings for the two components are evidently above 1 eigenvalue, giving the line on the Scree plot a steep rise, as illustrated in Figure 5.5.

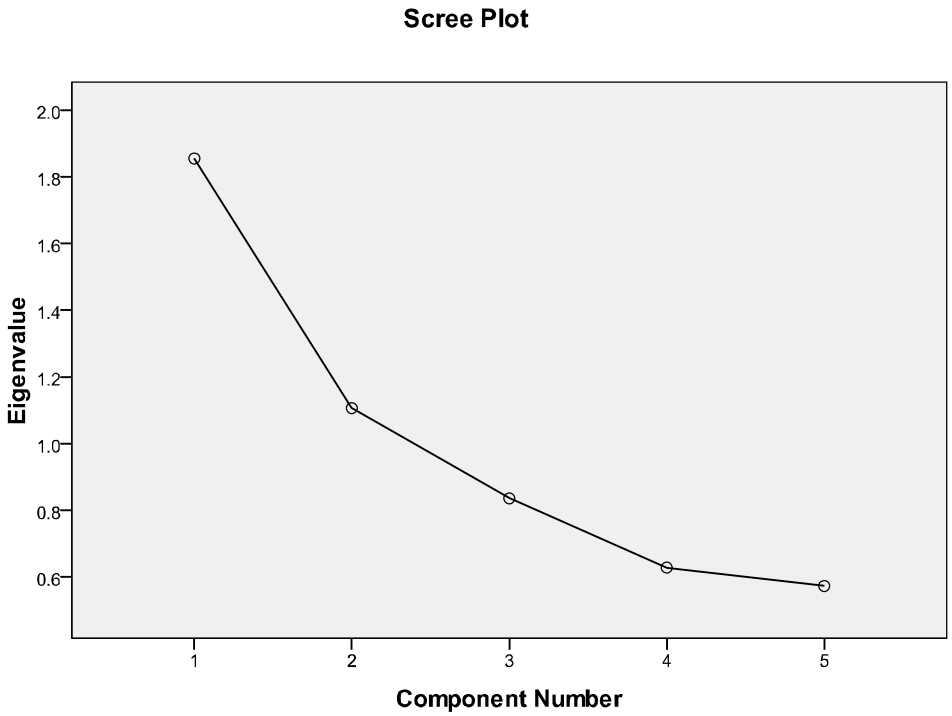

Figure 5.5: Library Experiences Scree Plot

After a factor analysis was carried out, plotting was done on a scree plot. Only values with integer one and above rose upwards. The value is regarded as a principal component if the value is an Eigen value above 1. Figure 5.5 shows that library experiences have two principal components.

5.5.4 IL Learning Environment

The study set to investigate the learning environment of the information literacy programme. On a scale of 5 to 1, strongly disagree, disagree, neutral, agree and strongly agree, respondents were required to indicate the influence of the teaching and learning environment on information literacy. Results in Table 5.14 indicated that the most significant influence in the studentsô learning environment was student-student interaction (mean 3.80) and Class size (mean 3.96). Overall learning environment and facilities were also found to be important, with means of 3.51 and 3.37, respectively.

Table 5.14: Learning Environment: Descriptive Statistics (N=130)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		Std. Deviation	Analysis N
Facilities (classrooms, computer labs) are adequate for IL learning	15	22	19	46	28	3.37	1.301	130
Close student-student interaction enhanced my IL learning	4	7	35	49	35	3.80	.999	130
Class size was good for programme	6	16	39	42	27	3.52	1.094	130
I am satisfied with overall learning environment	5	10	24	46	44	3.51	1.073	130

Findings indicate that the influence of learning environment on the information literacy programme is exemplified in the student interactions which make IL learning easier in a small class size, especially one with good facilities.

The study tested the role of the learning environment in information literacy learning by fourth-year psychology students. A factor analysis was carried out with a KMO test of specificity. The KMO test of measure of sampling accuracy value of 0.733 suggested that the matrix was statistically significant, with a p-value of 0.000, and 6 degrees of freedom, P is less than 0.05. The KMO test is a measure of validity which tests the relationship between items in a Likert scale. The result must produce alpha of over 0.5 in order to be considered adequate for inference. The result of 0.733 is therefore adequate. Table 5.15 shows the study findings:

Table 5.15: Learning Environment: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.733
Bartlett's Test of Sphericity	Approx. Chi-Square	185.044
	Df	6
	Sig.	0.000

Using the Principal Component Analysis, one component was extracted with the Varimax with Kaiser Normalization rotation method. Results in Table 5.16 illustrate that in component one

the most important aspect of the environment was that if there were facilities (0.445), then they could do well in a small class size and lead to overall satisfaction

Table 5.16: Learning Environment: Component Score Coefficient Matrix (N=130)

	Component
	1
Facilities (classrooms, computer labs, etc) are adequate for IL learning	0.445
Close student-student interaction enhanced my IL learning	0.181
Class size was good for programme	0.317
I am satisfied with overall learning environment	0.289

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Scores.

a. Coefficients are standardized.

After factor analysis was carried out, and a Scree plot generated, only the values with integer one and above rise upwards. The value is regarded as a principal component if the value is an eigenvalue and above 1. The Scree plot results revealed the presence of one principal component with eigenvalues exceeding plot 1, explaining 33 per cent of the variance. An inspection of the scree plot revealed a clear break after the principal component. The results reveal facilities, including classrooms and computer labs, as the most significant component with regard to the environment conducive for IL learning. This is illustrated in Figure 5.6.

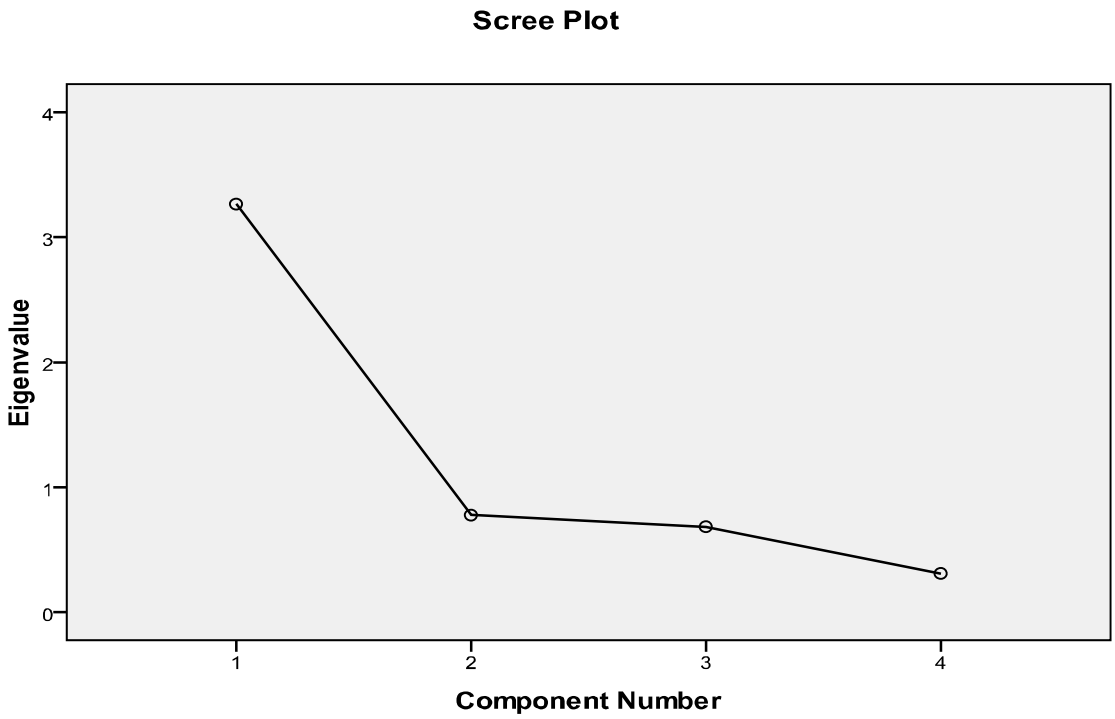

Figure 5.6: Learning Environment Scree Plot

5.4.4 Goals and Objectives of IL Programmes

The second research question sought to establish the goals and objectives of IL training sessions/programmes. The study established that the main objective of IL programmes was to make students independent learners and enable them to search for, and access, information in the different formats. The following statements were recorded reflecting IL programme objectives by librarian and lecturer respondents:

- *to impart the necessary skills that are important to access information in an efficient manner and to empower users with skills and knowledge to access relevant information in their areas.*
- *to make students aware of library resources, use them and appreciate the value of information on doing their assignments.*
- *to empower users with skills and knowledge to access relevant information in their areas and make them lifelong learners.*
- *to equip students with skills on how to search for information from different sources.*
- *to make them independent to be able to search information. The respondents also indicated that it was to impart the necessary skills that are important to access*

information in an efficient manner and to empower users with skills and knowledge to access relevant info in their areas.

- *to make students aware of library resources, use them and appreciate value of information on doing their assignments we do educate them plagiarism, reference and referencing styles and other topics include how to accessing e-resources and print resources, how to make use of, like a dictionary or a biography, a handbook and to know on how to differentiate on such formats*

Six (75%) of the lecturers who indicated they were teaching courses with an IL component listed objectives of teaching the courses at first-year level as including giving students knowledge that would empower them throughout their studies and giving them ability to find the information they will need. IT gave students skills to analyze and present data by understanding psychology research methods.

These statements give an indication that lecturers and librarians have a fairly clear understanding on what IL programmes should be able to achieve. Most of the recorded objectives came from interviews with librarians and lecturers.

5.4.5. How IL was Conducted

The third research question sought to establish pedagogical approaches used to deliver information literacy to psychology students. The librarian respondents were required to state how they conducted the IL sessions. Findings revealed that, although most of the instruction was done through lectures in class, others were given via e-mail and social media, especially Facebook. Other respondents indicated that the sessions were delivered during orientation and special sessions organized by the library. This finding suggests that the IL initiative in Kenyan universities was mostly conducted by the librarians. The content of the lessons or sessions included introduction to the library catalogue, referencing and citation management. Results of this study showed that teaching IL took place in small groups and a one-on-one basis. The respondents who indicated that the lecture method was one of the IL teaching approaches taught the library parts of a for-credit Communication Skills course that was taught to all first-year undergraduate students, covering a total of six to seven hours in a semester. There was no indication during the interviews, or while analyzing documents, to suggest that librarians were involved in curriculum development or end-of-semester assessment of students in the

Communication Skills course. Only one librarian mentioned that setting of questions and marking the library section of the communication skills course was left to the librarians who taught the section.

Respondents among the lecturers who indicated that the courses offered were purely IL, or had an IL component numbered 8 (53.3 %). Findings were ranked in decreasing order, as follows: IL was taught as various topics in particular courses, IL was taught to guide students in writing good term papers. This category of respondents explained that whenever they gave a research or term paper, they took students through the process of getting the resources needed and how to present the final papers properly, including citations. In terms of actual delivery, lecturer respondents indicated they used laptops and LCD projectors, suggesting perhaps that ICT had impacted IL teaching and learning as a delivery tool.

The lecturer respondents were asked to list specific subject areas that were used within other courses to teach IL skills to students. The findings were that most offered IL training under life skills, counselling issues and practical skills. According to the respondents, assessment of IL-related courses was done through exercises, essays, practical research writing, creative presentations, individual assignments/term papers, continuous assessments and end of term exams. The study subsequently sought to discover the names of the courses that had an IL component. Eight out of 15 lecturers (53.3%) responded positively to teaching courses that had an IL component. Their responses are shown in Table 5.17.

Table 5.17: Courses Taught that are Related to IL (N=8)

Course Taught that is Related to IL	Frequency	Percentage
Communication and writing skills (course 1&2)	6	75
Research course	4	50
Research methods	2	25
Introduction to counselling	2	25
Counselling programmes and administration	2	25
Psychotherapeutic practices	1	12.5

According to Table 5.17, the most common courses with IL component, in decreasing order were *communication and writing skills* (course 1&2) (75%). This course was core for all first-year undergraduate students in the universities. It covered library skills, academic writing and reading, listening and oral presentations. Different sections were taught by different lecturers, based on their expertise; *research course (50%) and research methods (25%).* The two research courses were taught to third-year psychology students, to prepare them for research work for their final-year projects; *introduction to counselling (25%)* and *counselling programmes and administration (25%),* respectively. The lowest ranked course was *psychotherapeutic practices (12.5%).*

These findings indicate that IL is inextricably linked with research as a domain or for communicating research findings. The findings revealed that the courses with IL components were offered all year round. This finding confirms what the students had similarly observed (see results in Table 5.10) and observations in Section 5.3.4.7.

5.4.5.1 Types of User Education/IL Programme Offered

The librarians were required to state what type of user, reader education or information literacy programme the library offered to undergraduate psychology students. The following responses were recorded; the most consistent programme was how to use the e-resources and how to access the e-books and citation management. All the respondents indicated that they conducted *library orientation* for new students; and organised training for groups of students and lecturers. Others provided instruction services through their classes, known as the ófirst-year experienceô or ó*library 101'*. The findings revealed that IL programmes in the library involved training users on how to use library facilities and resources, namely: print and E-books, print and E-journals, OPAC and general information retrieval skills.

The respondents were required to state what areas/topics were covered during IL training sessions in the library. Table 5.18 shows the findings.

Table 5.18: Areas/Topics Covered in IL Sessions (N=12)

Areas/Topics Covered (N=12)	Frequency	Percentage
E-resources searching	9	75
How to use OPAC	7	58.3
Available information sources	5	41.7
Citation management	4	33.3
Plagiarism	2	16.7

The results in Table 5.18 reveal, in decreasing order, the topics covered as: E-resources searching (75%); *how to use OPAC (58%)*; *available information sources (41%) citation management (33.3%)* and plagiarism (16.7%). The findings revealed that librarians were more heavily inclined to teaching availability and use of electronic resources than any other topics, suggesting the growing use of electronic resources at Kenyan universities.

Respondents were asked to state who conducted the information literacy training programmes in their institutions, in order to establish whose responsibility it was for teaching IL in the library. All the respondents 12 (100%) indicated that only qualified librarians with Masterôs degrees and above were allowed to teach IL programmes, with one respondent saying, ñaccording to our policy, only those with postgraduate qualification are allowed to teach.ò This could be an indication that IL teaching is taken very seriously by libraries, as demonstrated by the high qualifications required to teach the course.

Student respondents were required to state whether or not they had received any specific IL training designed for psychology undergraduate students, apart from the general sessions provided by the library to all students. The purpose of the question was to establish whether or not universities had made an effort to provide for IL that was discipline-specific. Responding to a Yes/No question, the study indicated that 80 (62%) of the students had received some form of specific IL training to psychology students apart from the general sessions by the library taught to all students, in their first year. The remaining 50 (38%) indicated that they had only been given the general training by the library in their first year, during orientation. Those 30 students who could not remember any IL-related content after first year are likely to be in the group of

the 37 students in Table 5.28, from the bottom of the table, who did not have a clear understanding of the IL concept.

The study subsequently sought to discover the nature of training the students had received. The aim of this question was to establish in which course or activity the students had received IL instruction. The findings recorded in Table 5.19 revealed, in descending order of ranking: training in use of ICT 49 (61.25%) - searching the library catalogues and internet; topic on use periodicals, 36 (45%). Other responses included counselling 30 (37.5%) and training to do research 10 (12.5%). These findings from student respondents are in agreement with findings from librariansô responses on the content of their IL instruction offered to students (see Section 5.5).

Table 5.19: Nature of Training Imparted to Students (N=80)

	Frequency	Percentage
ICT	49	61.25
Periodicals training	36	45
Counselling	30	37.5
Lectures on doing research	10	12.5
Group discussion	4	5
Peer education at work	3	5.75
Groups	2	2.5

Since most of the academic journals were in electronic format, the training on use of these journals was done in the computer lab or multi-media centres in the library, which made ICT the most critical component in IL training.

Students were asked to evaluate their IL learning experiences by responding to a number of questions on a scale of 5 to 1, starting with strongly disagree, disagree, neutral, agree and strongly agree, respectively. Results in Table 5.20 show the average mean for teaching and content as 3.8. The most important approach of teaching IL that impacted students the most was that which included plenty of examples and illustrations. This helped the students to

understand the lessons better (mean of 4.05), followed by the lessons that had hand-outs and other materials given (mean of 3.96). A large number of students 101 (with 3.92 mean), stated that they found the lessons intellectually stimulating, as shown in Table 5.20.

Table 5.20: Teaching and Content: **Descriptive Statistics (N=130)**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S/D	N
It was clear to me what I was supposed to learn in the information literacy course	3	13	37	54	23	3.59	0.962	130
The topics seemed to follow each other in a way that made sense to me	2	14	38	53	23	3.62	0.951	130
I found my studies intellectually stimulating	2	8	19	66	35	3.92	0.929	130
The hand-outs and other materials we were given helped me to understand the unit	1	5	24	64	36	3.96	0.839	130
I could see how the set work fitted in with what we were supposed to learn	2	8	34	62	24	3.75	0.874	130
Assessments of the information literacy course/sessions helped me learn better	3	5	40	57	25	3.71	0.893	130
Plenty of examples and illustrations given helped us to grasp things better	2	4	28	56	40	4.05	0.883	130

Findings on the teaching approach and content of the information literacy programme revealed that the way the programme was delivered greatly affected the experience of studentsô learning. An approach that includes illustrations and examples with take-home handouts seemed to appeal to the students. Curriculum developers and policy-makers in universities need to bear this in mind when designing IL programmes. The study also set out to test how the content of IL and the way it was taught affected the learning of information literacy by fourth-year psychology students. A factor analysis was computed. The results are given in Table 5.21.

Table 5.21: Teaching and Content: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.866
Bartlett's Test of Sphericity	Approx. Chi-Square	382.974
	df	21
	Sig.	0.000

a. Based on correlations

The KMO test of measure of sampling accuracy value of 0.866 suggested that the matrix was statistically significant, with a p-value of 0.000, and 21 degrees of freedom. P is less than 0.05. The KMO test is a measure of validity which tests the relationship between items in a Likert scale. The result must produce an alpha of over 0.5 in order to be considered adequate for inference. The result of 0.866 is therefore adequate.

Using the Principal Component Analysis, one component was extracted with the Varimax and Kaiser Normalization rotation method. The results in Table 5.22 illustrate that the most important aspect of teaching and content of IL was that students found IL studies intellectually stimulating (0.207).

Table 5.22: Teaching and Content: Component Score Coefficient Matrix[a] (N=130)

	Component
	1
It was clear to me what I was supposed to learn in the information literacy course	0.204
The topics seemed to follow each other in a way that made sense to me	0.206
I found my studies intellectually stimulating	0.207
The handouts and other materials we were given helped me to understand the unit	0.169
I could see how the set work fitted in with what we were supposed to learn	0.173
Assessments of the information literacy course/sessions helped me learn better	0.190
Plenty of examples and illustrations given helped us to grasp things better	0.188

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Scores

a. Coefficients are standardized.

After factor analysis was carried out, and a Scree plot generated, only values with integer one and above rose upwards. The value is regarded as a principal component if the value is an Eigen value and above 1. Figure 5.7 shows the two principal components.

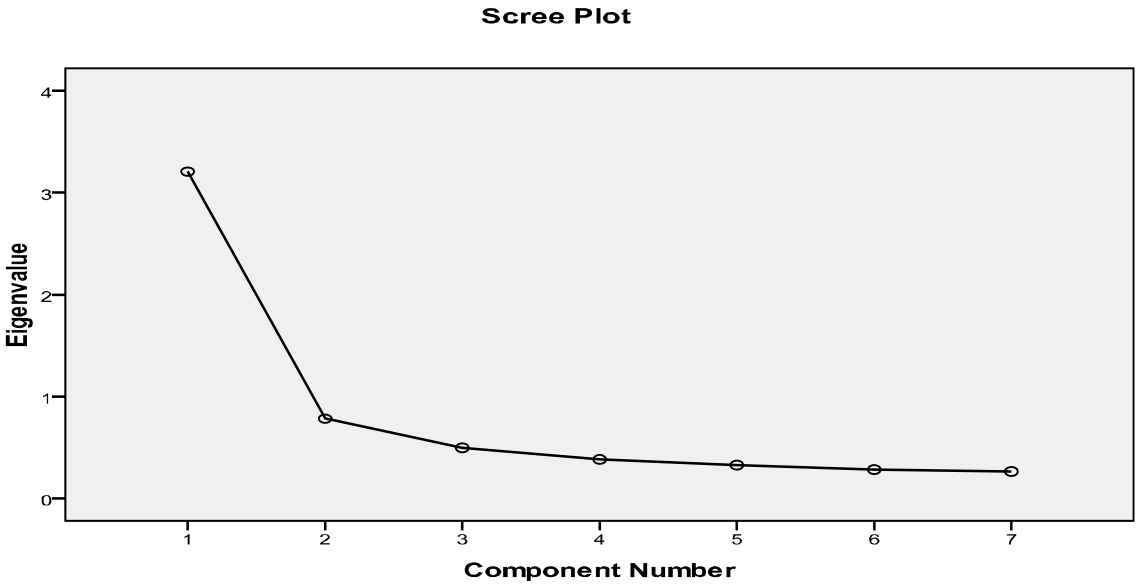

Figure 5.7: Teaching and Content Scree Plot

5.4.5.2 IL Assessment Techniques by Librarians

The study sought to establish the assessment techniques that were used by librarians in IL. The results shown in Table 5.23 reveal that various assessment techniques were used.

Table 5.23: IL Assessment Techniques by Librarians (N=12)

Assessment Type	Frequency	Percentage
Use of feedback forms	8	66.7
Practical observation during and after training	5	41.7
Continuous assessment test	4	33.3
Final exam by course lecturer	3	25.0

The findings were that assessment techniques used for IL included, in decreasing order: use of feedback forms 8 (66.7%); practical observation during and after training 5 (41.7%); continuous assessment tests given and marked by librarians 4 (33.3%); and final exam set by course lecturers 3 (25%). Commenting on the use of feedback forms, one respondent observed, ñWe donôt carry out evaluations but in a semester we have feedback forms for all services offered in the library.ò This indicates that librarians did not have structured and systematic

ways to assess students work in IL initiatives, since feedback forms are based on one presentation and may not be reflective of the state of the whole programme or course.

Results showed that IL was integrated in particular courses where it was taught as research term papers. The respondents were asked to list specific subjects within which IL was taught. The findings revealed that most applied IL skills training under life skills, counselling and practical skills. According to the respondents, assessment of IL was done though exercises; essays; practical research writing; creative presentations; individual assignments/term papers; continuous assessments and end of term exams.

5.4.5.3 Lecturers' and Librarians' Satisfaction with IL Skills of Graduates

Respondents were required to state whether or not they were satisfied with IL skills of graduates. The aim of this question was to establish the view held by lecturers on the quality of IL that graduates exiting from their institution possessed. The respondents seemed generally satisfied with the IL skill levels of fourth-year psychology students. Sixty three percent of the respondents agreed that they were satisfied with the IL skills of graduates, while 27 percent were not. Even among those who were satisfied with studentsô IL skill level, some felt that more needed to be done. For example, one respondent said, ñHonestly I cannot say 100%, I would put it 60% because in terms of term papers that I see, I think we have a long way to go and I think they could do better.ò Another respondent added, ñto some extent, they have the basics.ò

On the impact of IL on fourth-year psychology students, as seen by their lecturers, the findings revealed the ability to do their research papers on their own and post good grades at the end of the term/semester as the most significant. Librarians confirmed this by observing that there was increased use of the OPAC and library computers in accessing e-resources, as evidenced by the increasing number of database log-ins and the numbers in the library computer facilities.

For the librarians, the findings revealed that, like the lecturers, they were generally satisfied with the studentsô IL knowledge level as they exited the university. The majority of the respondents (66.7%) were satisfied with the IL knowledge level of those graduating, while the remaining 33.3% were not satisfied. One respondent who was satisfied with the studentsô IL

knowledge level said, ñ*Somebody who is leaving now is more information literate than when they arrived. You can see even from the way they search and retrieve information. I am seeing these people when they are exiting that they are changed a lot, in terms of maturity they are able to successfully or independently retrieve information with minimal assistance."*

5.5 Student Computer and IT Experiences

The study set out to investigate the impact of ICT on the psychology studentsô IL learning experiences. On a scale of 5 to 1: strongly disagree, disagree, neutral, agree and strongly agree, respectively, respondents were required to indicate the influence computer and IT experiences had on the learning and content of information literacy. The study findings indicate that the most important influence was studentsô ability to search the internet for course-related materials (mean 4.39), followed closely by the indication that computers had facilitated easier IL learning (mean 4.38). The students appreciated computer skills as they enabled them to prepare presentations and other reports (4.31). The findings are illustrated in Table 5.24.

Table 5.24: Computer and IT Experiences: Descriptive Statistics: (N=130)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S/D	N
I use a computer to prepare reports and term papers	3	4	15	36	72	4.31	0.955	130
I use email or other online communication programs effectively	2	4	20	41	63	4.22	0.923	130
I search the internet for course-related materials	1	4	14	34	77	4.39	0.885	130
I use electronic databases with ease to get needed information	4	15	13	50	48	3.95	1.109	130
I understand how to evaluate information on the internet for validity	4	11	23	56	36	3.80	1.045	130
Computers have helped a great deal in learning information literacy	1	4	10	43	72	4.38	0.819	130
Online learning experiences were well integrated in the face-to-face session	7	15	43	50	15	3.35	1.018	130
Electronic sources are my first priority when looking for information	3	14	20	34	59	4.02	1.141	130

The influence of computer and IT experiences on the information literacy programme was exemplified in the use of electronic sources as first priority when looking for information. Students were equipped with these skills and therefore used electronic databases with ease to get needed information, used email or other online communication programs effectively and used a computer to prepare reports and term papers. Teaching computers and ICT were part of the content of information literacy taught in the universities. The results of descriptive analysis presented in Table 5.24 established that the most important computer and IT experience was

the exposure of students to electronic sources. This way, the students were able to search the internet for course-related materials and use email and other online communication programmes effectively.

Concerning course work, computers helped learners to prepare reports and term papers. A factor analysis extracted three principle components. In component 1, the most important factor was that the electronic databases made access to information by the students easier, because students were able to integrate their online learning experiences with the face-to face situations, besides relying more on e-sources as a priority. Consequently, IL learning was experienced as learning how to use IT to access, retrieve and manipulate information. Maybeeôs two studies (2006, 2007) on undergraduate perception and information use at Millôs College in the USA, used a phenomenographic approach and found students experienced information literacy as finding information using IT. This study found that to effectively find information, students had to learn how to use various technology applications and tools.

This study sought to test the role of computers and ICT in information literacy learning by fourth-year psychology students. A factor analysis was carried out with the KMO test of specificity. The KMO test is a measure of validity which tests the relationship between items in a Likert scale. The result must produce an alpha of over 0.5 in order to be considered adequate for inference. The result of 0.866 was therefore adequate. Table 5.25 shows the findings.

Table 5.25: Computer and IT Experiences: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.712
Bartlett's Test of Sphericity	Approx. Chi-Square	274.051
	df	28
	Sig.	0.000

a. Based on correlations

The KMO test of measure of sampling accuracy value was 0.712. The KMO measure of validity tests the relationship between items in a Likert scale. The result must produce an alpha of over 0.5 in order to be considered adequate for inference. The result of 0.712 was therefore adequate.

Table 5.26 shows that in component one the most important aspect of computer and IT experiences was that the students used electronic databases with ease to get needed information (0.363), meaning they searched the internet for course-related materials (0.263) and used email or other online communication programs effectively (0.290). In component two the students could do well if online learning experiences were well integrated in the face-to-face session (0.783). In component three, electronic sources are their first priority when looking for information.

Table 5.26: Computer and IT Experiences: Component Score Coefficient Matrix (N=130)

	Component		
	1	2	3
I use a computer to prepare reports and term papers	0.261	-0.170	0.062
I use email or other online communication programs effectively	0.290	-0.126	-0.044
I search the internet for course-related materials	0.263	-0.136	0.006
I use electronic databases with ease to get needed information	0.363	0.173	-0.108
I understand how to evaluate free information on the internet for validity	0.174	0.396	-0.047
Computers have helped a great deal in learning information literacy	0.035	0.001	0.187
Online learning experiences were well integrated in the face-to-face session	-0.220	0.783	-0.004
Electronic sources are my first priority when looking for information	-0.167	-0.072	0.944

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Scores.

a. Coefficients are standardized.

After factor analysis was carried out, and plotting was done on a Scree plot. Only values with integer one and above rose upwards. The value is regarded as a principal component if the value is an Eigen value and above 1. Results in Figure 5.8 revealed the presence of three principal components, with eigenvalues exceeding plot 1, explaining 33 percent of the variance, 2 explaining 13 percent of the variance and 3 explaining 11 percent of the variance.

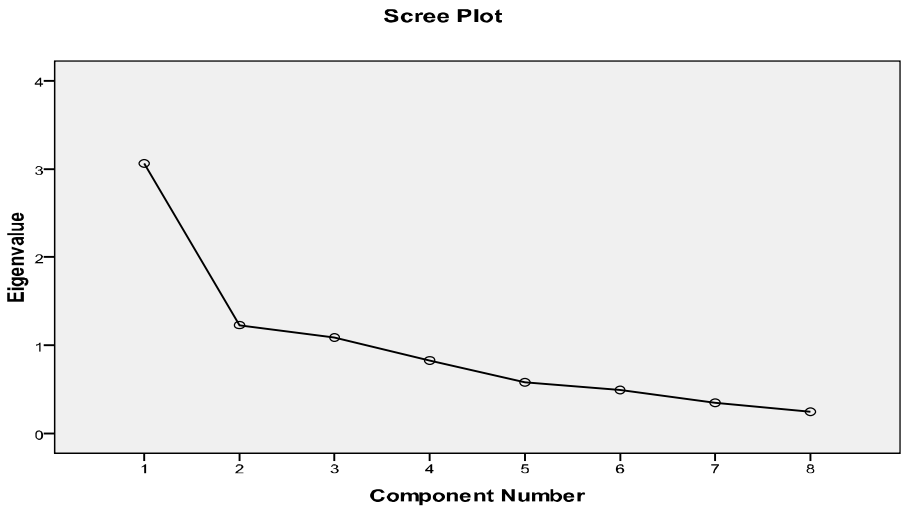

Figure 5.8: Computer and IT Experiences Scree Plot

In-depth interviews were conducted with the librarians in the study. The participants were asked to state the impact of ICT on IL teaching and learning from the library point of view. Findings from the responses are illustrated in Table 5.27.

Table 5.27: Impact of ICT on Teaching and IL Learning (N=15)

Impact of ICT on Teaching and IL Learning	Frequency	Percentage
Resources on IL available and accessible via internet e.g. online tutorials and websites	8	66.7
Computers and LCDs added visual to process	5	41.7
Social Media and email made interaction possible	4	33.3
IL teaching relies on ICT since information is digital ñenhanced the work of a librarianò	3	25.0
Easy to teach due to automation e.g. OPAC	2	16.7

The findings reflected in Table 5.27 show, in decreasing order of importance, accessibility to resources on IL via the internet, indicating the high importance that was placed on electronic sources of information. In this regard, ICT had provided a channel and platform where needed information was found; the use of computers and LCDs for IL instruction, indicating a shift by teachers from the traditional teaching styles to adopting new technologies in their instruction;

the use of social media and email and ICT had made teaching IL easy due to library system automation. The findings in Table 5.27 indicate that librarians identified the internet as a platform for teaching and learning IL. This finding corroborates an earlier one which revealed that students relied greatly on the internet for materials for their academic work (see results in Table 5.26).

Lecturersô respondents were asked to state in which ways ICT had impacted on IL teaching and learning. The findings revealed that the use of Microsoft PowerPoint for class presentations with laptops and projectors were the notable ICT impacts. Use of this equipment included projection of teaching slides and teaching using video clips. Other ways that ICT had impacted IL delivery by psychology lecturers were the use of the internet and adopting e-learning programs, for example Blackboard. The implication here is that students were able to learn at their own convenience and pace.

5.6. Perceptions of Respondents towards Information Literacy

This section tried to establish how various groups of participants understood the concept of information literacy. In investigating their experiences, student respondents were asked questions that solicited both qualitative and quantitative responses. Qualitative analysis included seeking to establish the understanding of the concept of IL among respondents and their attitudes and perceptions towards IL. Various descriptive/interpretive techniques were used for analysis of the data, including discourse and content analyses (See Section 5.4.) A summary of the responses is provided below.

5.6.1 Perceptions of Information Literacy by Students

Students were asked to state their understanding of the term ñinformation literacy.ò Table 5.28 provides a summary of their answers.

Table 5.28 Students' understanding of the Term 'Information Literacy' (N=130)

Meaning of Information Literacy	Frequency	Percentage
Skill to find and use information	33	25.4
Ability to get knowledge locally and globally	25	19.2
Access to information	24	18.5
Having a knowledge of sources of information	11	8.5
Having a knowledge bank on a certain concept	9	6.9
Knowledge of computers	7	5.4
Art of being informed	6	4.6
Skill to internalize various information/knowledge	6	4.6
How to comprehend information	5	3.8
Communicating and disseminating information	3	2.3
Ability to communicate and interact with others	1	0.8

According to Table 5.28, the students generally understood the term ñinformation literacyò, mainly to deal with the skill, knowledge or ability of an individual to get the information they needed. From the findings, *skill to find and use information* 33 (25.4%) was ranked highest, followed by *ability to get knowledge,* 25 (19.2%) and *access to information* 24 (18.5%). These three ways of understanding IL by students constitute 82% of the ways students understood the term Information Literacy and are closely related to ALAôs definition of IL as the ñability to recognize when information is needed and have the ability to locate, evaluate, and use the information obtained effectivelyò (ALA, 1989: para 3). This is further demonstrated by one of the respondents, who understood IL to mean ability to, ñidentify, locate, evaluate and effectively use the information in dealing with the problem at hand.ò Finally, the least ranked definitions included *comprehending information* 5 (3.8%), *communicating and disseminating information* 3 (2.3%) and *ability to communicate and interact with others* 1 (0.8%).

After analyzing their perception of IL, student respondents were required to state if learning information literacy at the university was important, on a scale of YES or NO. The results were that majority of students 70 (54%) generally considered IL instruction as important, while the

rest 60 (46%) either did not respond or indicated it was not. The ñYESò responses are presented in Table 5.29.

Table 5.29: Students' Perception of IL (N=70)

Variable	Frequency	Percentage
Empowerment in research	66	94.3
Expand knowledge	64	91.5
Better communication skills/ effective gathering of information	56	80.0
Promotes awareness	40	57.1
Exploration	37	52.9
Encourages competence	35	50.0
One gets more equipped	33	47.1
Enhance day-to-day lives	7	10.0

According to the results in Table 5.29, respondents indicated that learning IL was important in relation to their research communication needs. The responses were listed and ranked in decreasing order, with the highest ranked being: *Empowerment in research,* followed closely by*: expand knowledge.* The lowest ranked perception of the importance of IL was its role in *enhancing the day-to-day lives of students.* These findings seemed to indicate that students perceived IL to be critical in meeting their academic information needs, as opposed to day-to-day lives.

5.6.2 Perceptions of Librarians towards Information Literacy

Librarians perceived IL as the backbone of training at university, without which producing quality graduates would be difficult. They asserted that IL should be made an integral part of university education in Kenya, in order to offer a holistic education experience and increase research output, by making students independent, lifelong learners. The findings also indicated that since IL is such an important component of university education, it requires deliberate attention from the highest level of support in the university. The respondents looked beyond their university and indicated that if IL was given its rightful place in universities, it would result in students making great contributions to national development.

In an attempt to establish how librarians perceived IL, they were asked to state their understanding of the term and concept of ñinformation literacy.ò Findings showed that they understood IL as dealing with how to repackage and use information effectively; and acquiring skills for searching and organizing information to meet personal needs. One of them stated, *IL means the ability of users to access and make use of information in various formats and for a given purpose; and IL refers to, "Equipping users with skills for information-seeking and application."* The fairly clear articulation on the concept of IL was perhaps informed by the fact that the librarians were actively involved in IL and they were therefore clear about what it meant. They performed better than lecturers and students in defining IL.

5.6.3 Perceptions of Information Literacy by Lecturers

Lecturers were required to state their understanding of the concept of *information literacy*. Although some of them were not sure they knew the concept, most of those interviewed understood IL to mean ability to access or get information needed. Some of the specific responses included:

- ñUnderstanding access to information, making use of and seek particular informationò
- ñExtracting information through use of ICT or accessing booksò
- ñHow one has learnt information in order to impartò
- ñBeing able to access information data on line or whether it is print typeò
- ñBeing competent to handle informationò
- ñBeing aware of various knowledge of informationò
- ñAbility to get information and use itò.

The results are detailed in Table 5.30

Table 5.30: Lecturers' Understanding of the Concept of Information Literacy (N=15)

What is Information Literacy? (N=15)	Frequency	Percentage
Understand access to information	14	93.3
Ability to get information and use it	13	86.7
Extracting information through ICT	12	80.0
Content of knowledge	11	73.3
Knowledge awareness	10	66.7
Knowing how to get information through media	7	46.7
Concept to handle information	5	33.3
Students being aware of what is happening	4	26.7

According to the results in Table 5.30, the ranking by lecturers, in decreasing order, was: *understand access to information*, followed by *ability to get information,* then *extracting information through ICT.* These three perceptions seem to suggest that IL is a key tool for information-seekers. The least ranked response was *students being aware of what is happening.* Unlike the students (see section 5.6.1), the results revealed that lecturers seemed to see the place of IL beyond the academic context. Their responses suggested that they understood IL to have a place in general society, outside academia. Lecturers were further asked to state their perception of IL in relation to the general university education in Kenya. The results are presented in Table 5.31.

Table 5.31: Lecturers' Perception of IL in Kenyan Universities (N=15)

Lecturers' Perception of IL in Kenyan Universities	Frequency	Percentage
Needed and timely	10	66.7
A good idea for university education	6	40.0
Be made core course in first year	5	33.3
Bring new perspectives to learning	4	26.7
Solution to group learning of our education system	3	20.0
Backbone of publishing	3	20.0

Table 5.31 shows that IL is perceived by lecturers as a critical component of the university instruction process. They generally perceived IL as useful to students and lecturers. When ranked in decreasing order of importance the first three responses were as follows: *IL is something needed and timely 10 (66.7%); IL is a good idea for university education 6 (40%);* IL must be *made a core course in first year 5 (33.3%)*. The least of the respondents 3(20%) each perceived IL as *a solution to group learning* and *a backbone of publishing*. One respondent declared, ñIL is very important, it is needed by all students graduating from university.ò Generally, lecturers seemed to indicate that IL was an important component of university education which needed more attention than it was receiving.

5.7 Challenges Faced by Psychology Students in Learning Information Literacy

The final research question investigated challenges that psychology students faced in learning IL. Being in their final year of study these students were best placed to give a reflection of their academic journey and identify impediments to learning IL. Table 5.32 provides a summary of the results.

Table 5.32 Challenges Faced by Psychology Students in Learning IL (N=110)

Challenges	Frequency	Percentage
Inadequate learning resources	30	27.2
Inadequate facilities (computer labs, computers, classrooms)	17	15.5
Poor teaching methods	16	14.5
Lack of time to practise what is taught	14	12.7
Limited access to internet and down times	8	7.3
High cost of training e.g, Internet cost is high	5	4.6
Large class size	4	3.6
Lack skills to evaluate information	2	1.8
Limited computer skills	2	1.8
Lack of IL timetable	1	0.9
Late learning	1	0.9
Confusing emerging issues	1	0.9
Long period before results are released	1	0.9
Poor feedback e.g. results of assessment	1	0.9
Integration in other courses not desirable	1	0.9
Ignorance ï lack information on IL importance	1	0.9
No policy guidelines	1	0.9

Learning IL from the student perspective had been affected by several obstacles. Findings showed that most of the challenges faced by students were related to inadequate resources and facilities. The challenges were summarized and ranked in decreasing order, as follows: Inadequate learning resources that included appropriate books and resources in other formats; inadequate facilities that included computer labs, computers and classrooms; and poor teaching methods; resulting mostly from inadequacy of trained personnel. The least ranked challenges were: Some concepts are difficult to understand, information given was not adding up and lack of information on the importance of IL. The students were asked to state how they thought an information literacy programme could be improved to make learning it better. Table 5.33 provides a summary of the results.

Table 5.33: Steps for improvement of IL Programme (N=130)

How to improve IL programme	Frequency	Percentage
Additional facilities	113	86.9
Introduction to in-depth programmes	98	75.5
Be a foundation course to first years	95	73.1
More training	90	69.2
Expansion of libraries	79	60.7
Increase IL awareness	68	52.3
Empower people to work on their own	45	34.6
Follow-ups on learnt skills	32	24.6
Putting what has been learned into practice	30	23.1
Friendly facilitators	20	15.4

Table 5.33 indicates that most students 113 (86.9%) indicated that for better IL instruction the need for adequate facilities was critical. Another 98 (75.5%) proposed an introduction of students to programmes that required analytical and critical thinking skills. The need to make IL a foundational course that is compulsorily taught in first year was raised 95 (73%). Another significant number of respondents 90 (69.2%) expressed the need to intensify training of instructors involved in IL instruction to ensure adequacy in number and IL training levels.

5. 8 Challenges that Impeded Delivery of IL by librarians

Librarians were required to state challenges that, in their view, impeded delivery of IL. Table 5.34 gives a summary of the results.

Table 5.34: Challenges that Impeded IL Delivery as Perceived by Librarians (N=12)

Challenges that Impeded IL Delivery	Frequency	Percentage
Not enough time	6	50.0
No formal curriculum	5	41.7
Inadequate facilities (computers, rooms)	4	33.3
Inadequate staff	3	25.0
No motivation to learners	1	8.3

The results in Table 5.34 show, in decreasing order, unavailability of time, both for librarians and students as a leading impediment to IL teaching and learning. Librarians observed that the absence of time allotment for IL meant the students were at liberty to choose whether or not to attend IL instruction. The second impediment was the absence of IL in the curriculum. The lack of an IL formal curriculum left librarians to decide what to include in IL instruction and this could be an indication that academic administrators had not yet fully acknowledged the role and importance of IL instruction. The absence of a formal IL curriculum impacted negatively on its teaching and learning.

Staff to handle IL was considered not adequate. The issue of inadequate staffing and other resources raised by librarians was a major impediment affecting IL teaching, as shown by the results presented in Table 5.32. Lack of adequate facilities, especially computers, greatly affected IL delivery. The last challenge raised by librarians as affecting IL instruction was the lack of motivation for learners. In the words of one of the respondents, ñstudents only show interest and also ask for help when they are stuck during research.ò The respondent further stated that studentsô turnout was low when called to attend IL training, perhaps because IL is not timetabled, making them feel it is not important.

5. 9 Challenges that Impeded IL Teaching by Lecturers

Lecturers were asked to state challenges that impeded IL teaching and learning. The results are presented in Table 5.35.

Table 5.35: Challenges that Impeded IL Learning as Perceived by Lecturers (N=15)

Challenges that Impeded IL	Frequency	Percentage
Time	4	26.7
High number of students	4	26.7
Attitude	3	20.0
Lazy students	2	13.3
Weak writing ability	2	13.3
Media phobia	2	13.3
Facilities	2	13.3
Lack of training for lecturers in IL	2	13.3

According to the results presented in Table 5.35, the challenges impeding IL teaching and learning, as perceived by lecturers, were rated as follows: *Time* and *high number of students* were highest ranked at 26.7%; and *students' negative attitude towards learning IL* represented by 3 (20%) of the respondents. Respondents revealed time constraints, including absence of IL in the curriculum and teaching timetables. Increase in university enrolment was cited as the cause of high numbers of students in a given class. Other challenges raised included *inadequate facilities*, *media phobia by lecturers, lack of IL training for lecturers, weak writing abilities and laziness among students*.

A subsequent question required respondents to indicate how the challenges impeding IL delivery could be addressed. Results in Table 5.36 showed that 5 (33.3%) of the respondents indicated that collaboration between lecturers and librarians was needed to make IL teaching and learning successful, followed by 4 (26.6%), who indicated that teaching departments needed to be encouraged to teach IL by the university administration. Another 3 (20%) respondents cited expansion of teaching facilities, including computer laboratories and making IL a compulsory course on its own, as ways to overcome challenges that affected teaching and learning IL. The findings further revealed that there was a need to train lecturers in IL (13%) in order for them to be effective in the IL training of students.

Table 5.36: Addressing Challenges that Impede IL Teaching and Learning (N=15)

How to Address the Challenges that Impede IL Learning	Frequency	Percentage
Collaboration between lecturers and librarians	5	33.3
Encourage departments to teach IL	4	26.6
Expansion of facilities	3	20.0
Introduce IL as core course	3	20.0
Train lecturers in IL	2	13.3
Librarians to be more proactive	1	6.6

5.10 Enhancing IL in the Kenyan University Education System

Librarian respondents were required to state how they thought the challenges in 5.6.4 could be addressed. The findings show that there is a need to invest more in computer infrastructure. Findings further revealed that librarians preferred IL to be included in the university curriculum, so that it becomes an examinable course. In addition to making IL an examinable course, the respondents indicated the need to change methods of teaching, from the lecture only to one that requires students to do research and write quality term papers. Training of IL instructors in pedagogy was suggested as the way forward. Other respondents felt there was a need to recruit adequate numbers of qualified staff, especially in the public universities that had very high numbers of students. Similar challenges were reported in IL literature, including Dadzie (2009), who investigated IL initiatives in Ghanaian universities and found limited staffing, poor technical infrastructure, lack of time on the timetable for IL and the large number of students as impediments to teaching and learning IL.

Further findings from respondents showed that addressing IL teaching and learning challenges might require that information literacy is integrated within other existing courses offered, in order to give the students a contextual IL experience. In addition to integrating IL in many of the existing courses, respondents felt it was time a full IL course was included in the university curriculum for all undergraduates. This would give it its rightful place. The IL programme could also be enhanced by engaging the student leaders and all the university staff in the

information literacy programmes and not leaving it to librarians alone. Top management support was needed. For faculty and staff, the IL programme should be flexible, to accommodate the busy schedules of the faculty/staff.

Lecturer respondents were required to state what could be done to enhance IL delivery in universities. In decreasing order of importance were: *involvement of academic administration in IL*, meaning they acknowledged that, to succeed, IL needed to be addressed beyond teaching departments or library*;* the need for *more assignments* for students to do research; a strategy to enhance IL learning; in-*house training* of both staff and students in information literacy issues. In summary, the lecturer respondents observed that instructors must first be fully equipped with the knowledge and skill to pass on to the students and the students given more time to apply the taught skills to give them a hands-on experience and sharpen their IL skills.

However, in all four universities, the findings revealed that there was no formal structure that allowed for a specific IL course to be offered to psychology students. This was the result of the lack of a policy framework for IL learning, not only for psychology students but for the entire university. While surveying IL programmes in Nigerian universities, Baro and Zoukemefa (2011) observed that lack of an IL policy was a major impediment to the development of IL in the institutions of higher learning. Kavulya (2003) and Bruce (2002) pointed to the lack of an IL policy as militating against the development of IL in African universities.

5.11 Document Analysis Report

Chapter Four discussed the multiple ways of data collection that were used in this study. In addition to questionnaires and interview questions, document reviews were applied as a complementary method. The aim of using documentary reviews was to corroborate responses from other data collection methods. The documents analysed included course outlines, teaching presentations, hand-outs and fliers and library instruction assessment procedures. The document analysis addressed specifically the following research questions: *What are the goals of the information literacy programmes offered to psychology students?* And*, what pedagogical approaches are applied in delivering information literacy?* The results are given in Appendix XVI

Analysis of the documents revealed IL teaching goals were clearly stated in the various documents. These findings show that the ultimate goal of IL included developing lifelong learners through a student-centred outcomes approach. Studentsô responses to an open-ended question on the gains they could associate with learning IL (Tables 5.7 and 5.10) indicate that these goals were being met. The students stated that they had gained critical thinking skills and were competent to handle information-related issues, including accessing the needed information which could be seen as indicators of a lifelong learner. Some of the key goals from the findings include:

- *to equip library users with the required skills to explore library resources to meet their information needs;* and
- *to develop and apply various communication techniques through information analysis, interpretation, clear and critical thinking, organization, problem-solving and library research.*
-

The findings of this study also revealed that the content of IL teaching available to psychology students was comprehensive and covered information sources, citation management, information literacy and information access. Findings further showed most instruction as being done by librarians using LCD projectors, either in lectures or small groups of students. Topics covered included *use of OPAC, use of e-resources, including e-books, online resources, citation management, type of libraries and their services*. These results are in tandem with what the librarians stated in Table 5.18 and what students reported as the type of IL training they received in Table 5.19. Further analysis revealed use of feedback forms, group work and final exams as major assessment procedures.

5.12 Summary

In brief, this chapter has presented the findings of the study that sought to investigate the information literacy learning experiences of fourth-year psychology students in Kenyan universities. The results of the study generally indicate that fourth-year psychology students experienced information literacy as acquiring skills for finding information and resources they needed, learning how to use ICT to access, retrieve and manipulate information, with student-librarian interaction as the most important experience that students required. The main objective of an IL programme was to make students independent lifelong learners, who are able

to access information in the different formats. Ways IL is taught are embedding in existing courses, face-to-face, online, lectures, e-mail and social media, small groups, library tours and orientation. IL teaching and learning content included topics like access to E-journals, OPAC, citation management and plagiarism, all with an ICT component.

IL learning is enhanced by good facilities, small class sizes and studentï to-student interaction. ICTs were found to be catalysts that made IL learning faster and easier. All respondent groups perceived IL as an important component of university education with students indicating confidence in accessing and using information resources. Lack of facilities was the highest challenge to teaching and learning IL. Other challenges included lack of formal IL training for librarians and lecturers and lack of time and collaboration between librarians, faculty and administration staff. Lecturers and librarians were satisfied with IL level of students when they exited from universities for the labour market. A document review report is presented to corroborate the findings from interviews, especially on the pedagogical, assessment and objectives of IL programmes, and responses from students.

Detailed discussions and interpretations of the findings presented in this chapter are given in Chapter Six.

CHAPTER SIX

DISCUSSION AND INTERPRETATION OF FINDINGS

6.1 Introduction

The ñdiscussion of findingsò chapter in a doctoral thesis is aimed at explaining the meaning of the results of the study and includes the major findings, significance of the findings and how the findings relate to those of similar studies (Hess, 2004). The study addressed the following research questions: What information literacy learning experiences do the fourth-year psychology students possess? What are the goals of the information literacy programme at the Kenyan universities? What pedagogical approaches are used to deliver information literacy to psychology students? What is the role of ICT in promoting the learning of information literacy? What are the perceptions of fourth-year psychology students towards information literacy? What are the challenges experienced by fourth-year psychology students in learning information literacy?

The preceding chapter (data analysis and presentation of findings) presented and analysed the findings from the data collected through questionnaires, interviews and document analysis. Chapter Six presents the discussion and interpretation of the findings. The structure of this chapter is constructed around the research questions and the theory that underpinned the study. This chapter covers: 6.2.1 Studentsô IL learning experiences, 6.2.2 Information literacy competencies acquired by graduating students, 6.3 Goals of the information literacy programmes offered, 6.4 Content and how information literacy was taught, 6.5 Role of ICT in information literacy teaching and learning, 6.6 Perceptions of students and staff towards information literacy, 6.7 Challenges in teaching and learning information literacy 6.8 Summary.

6.2.1 Students' IL Learning Experiences

The first research question sought to investigate the type of IL learning experiences the fourth-year psychology students had acquired. This study established IL learning experiences to include finding IL learning as the development of skills for finding and using information (see Table 5.28); development of critical thinking skills (see Table 5.7); enhancement of problem-solving/decision-making skills (See Tables 5.7 and 5.9); learning a relational process; IL

learning as stimulating (see Table 5.20); learning how to use ICT to access, retrieve and manipulate information; enjoyment; and improvement of communication and writing skills (see Tables 5.9 and 5.10).

The findings of this study established that students experienced IL learning as *acquiring skills for finding and using information and resources they needed.* As shown in Table 5.28, students found IL learning as the avenue that provided them with the skills and knowledge to search for more information to address their needs. The information-finding skills made the students able to effectively access the resources they needed and become effective communicators, as they used the information found. In this regard, students found that IL enabled them to access various sources of information effectively, as it exposed them to skills of searching different types of information sources. Use of the information accessed included research and writing of reports and term papers. The significance of knowing how to find and use information was highlighted by Limberg (2000), who investigated students doing a political studies course to establish the relationship of their information use and learning outcomes and found a direct relationship. Students who demonstrated knowledge of how to find and use information posted a better understanding of their topic, while those with limited skills in finding and using information had limited understanding of their topic.

Diehm and Lupton (2014) studied university students' experiences of learning information literacy at an Australian university. Their phenomenological study revealed that students experienced IL in diverse ways, including experiencing IL as learning to find information, learning a process to use information, to create a product, to build a personal knowledge base, to advance disciplinary knowledge and to learn how to use information to grow and contribute to others. The understanding of IL by the respondents in this study, that IL learning refers to imparting skills and knowledge for finding information and needed resources, seems to infer that IL learning is a continuous process for acquisition of information skills (Johnson, 2001) and information competency (Dangani, 2009). However, the Centre for Intellectual Property in the Digital Environment of the American Library Association observes that IL should be viewed as going beyond acquisition of skills, into being a way of creative and critical thinking that ñenhances research and integration of knowledge from varied sourcesò (CIPDE, 2005:ix).

This finding agrees with Bruceôs assertion that IL develops in learners the ability to acquire information (Bruce, 1997). Access to information starts with understanding available sources of information and how they are structured. The information sources are varied and may be human, bibliographic or organizational, and in different formats, including print, electronic, pictorial and images. Access could be direct, or indirect through an intermediary. The *information sources* and *information process* conceptions in Bruceôs (1997) IL model indicate that the two conceptions focus on knowing where information exists and how to find it. This fits in well when advancing the process of developing lifelong learners.

A descriptive analysis was done (see Section 5.4.2 and Table 5.11) to establish what students considered would be the most important experience with regard to using library resources. The requirement for student-librarian interaction was found to be the most important experience that students felt would result in enjoyable IL learning experience. The present study revealed the need for the provision of appropriate resources and assistance on how to use the library to find resources to write term papers. The factor analysis results revealed that the provision of resources and assistance in the exploitation of the library resources were valued by students (see Section 5.4.2 and Table 5.11). This finding corroborates a report to ACRL, which observed that increased student-librarian interaction increased usage of library resources (Kuh & Gonyea, 2003:266). The subject matter of the report was based on the results of an exploratory study that sought to examine the nature and value of undergraduate studentsô experiences with academic library in the USA.

Results of the present study revealed that students had experienced *IL learning as acquiring analytical and critical thinking skills*. Most students indicated that they had gained skills that greatly enhanced their research experience, by learning information literacy (see Section 5.4.2 and Table 5.10). Specifically, students found IL learning had impacted their research ability, by empowering them with critical thinking skills that enabled them to see through the various information sources they came across and sieve them to establish what was relevant to their need. An investigation of the relationship between critical thinking and library use anxiety by Kwon (2008) among undergraduate students in an American university revealed a negative relationship between the two variables. Kwon found that library anxiety negatively affected and consequently hampered utilization of critical thinking skills. By developing awareness of

resources and how to access them, IL to a great extent reduces library anxiety and, in the process, enhances utilization of critical thinking skills.

Similarly, a study by Brown, Weingart, Johnson and Dance (2004), on student attitudes and library anxiety of the freshmen at the Utah State University in the USA, found that freshman orientation reduced library anxiety among students and this, in turn, positively affected their academic performance. Jiyen and Onyancha (2010) found that lack of experience in the use of libraries among first-year students intimidated most freshmen.

The likely development of critical thinking skills and the ability to apply them led students to describe their IL learning experience as *enhancement of problem-solving/decision making skills* (see Tables 5.7 and 5.9). Problem-solving/decision making skills are covered under the information process conception (see Section 2.3.3). This means that students used whatever information they had to effectively deal with a situation at hand. The skills can be applied to more than one task or problem. IL learning involves learning or developing the skills needed to address a problem and can be applied again, to a similar, or different problem. For instance, Maybee (2007) points out that students use information to do their assignments or solve life problems.

McCarthy (2003) identifies some constructs of the FLIP IT model that work well in developing collaborative activities that enhance information literacy and critical thinking skills acquisition by students. These constructs include: Focus ï deals with establishing the exact need for information; Links - what you need to locate appropriate resources for the information you need, and Payoff ï practical application of the information found. These ensure that a student is equipped with skills that can be applicable to any task or problem. Other IL models, designed to inculcate problem-solving and critical thinking as expected student learning outcomes, include the Big 6 Information Skill model (Eisenberg & Berkowitz, 2009; to Eisenberg, 2005d), Information Seeking Process (ISP) and the Sauce Model (Bond, 2001). Bruce (2003) observes that the end result of the information process conception is effective action, problem-solving or decision-making.

Students found *IL learning as a relational process*. This study showed that increased student-librarian interaction was a result of librarians becoming more visible and accessible to larger numbers of students, in order to address their information needs. It was noted (see Table 5.11) that students highly valued their interaction with librarians and found librarians a valuable source of information. The students desired increased opportunities for interaction with librarians. Kraemer, Lombardo and Lepkowski (2007) compared three IL pedagogies at Oakland University and revealed that contact with a librarian was an important component of student IL learning. The three pedagogies included face-to face, online and a combination of both. These findings concur with those of Gross and Latham (2011), who found students perceived librarians as a source of information. Gross and Latham investigated student conceptions of, and experiences with, interacting with information in the United States. The study revealed that people and the internet were key sources of information in three ways. People were sought after, first, to offer information, second, to guide seekers to find needed information or, third, trainers who imparted information-seeking skills. Despite the different contexts of this current study with that of Gross and Latham, respondents in both studies had not been exposed to formal IL training, and this could be the explanation why respondents in the two studies found librarians very useful in meeting their information needs. The desire for more student-student interactions in this study (see Table 5.11 and 5.14), and the overwhelming preference to ask someone for information in Gross and Lathamôs study, further emphasized the fact that people were important as sources of information. This study has revealed that teaching IL is a relational exercise and, therefore, for development of an effective IL curriculum, there will be need to take cognizance of people aspects, since this has proved to be an important IL learning experience component. This would also apply to those charged with teaching IL, who will need to understand that effective IL teaching and learning goes beyond the content to include relationships. This finding brings to their attention the important role they play in ensuring successful IL learning and should affect the way they view their roles.

The present study indicated that learners found *IL learning as stimulating* (see Table 5.20). Students observed that they were motivated to learn as a result of knowing how to get new information and integrate it into what they already knew. It can be concluded from this finding that learning IL not only widens a studentôs horizon of knowledge, by increasing their confidence in dealing with new information, but awakens a desire to learn more. As Abid

(2004), in his report to UNESCO observed, IL forms the basis for developing lifelong learners, which comes with the continuous desire to learn. Desire to learn is a key component of motivation which is, in turn, likely to enhance the success of a learning environment. The desire to learn expressed by students contradicts the concern raised by librarians (see results in Section 6.7), which revealed that it was difficult to get students to sign up for IL sessions. The same group that was reported to shy away from signing up for IL indicates that it desires to learn IL as a way of knowing new things.

Small, Zakaria & El-Figuigui (2004) studied motivational aspects of IL instruction at seven community college libraries in the US. They used interviews and observations to obtain data for their study. Their findings revealed that the different approaches used positively affected the studentsô motivation to learn, with two-thirds of the students interviewed describing IL learning as stimulating and motivating. They were, however, concerned that the students who had a contrary view were a sizeable group that needed to be studied to understand the reasons for their demotivation. Their study found adequate facilities and trained instructors as key motivational components of teaching and learning IL. Although both studies had students describe their experience as motivating, the focus seems to differ. Whereas the students in the current study focused on the IL instruction *content*, students in Small *et al.* (2004) focused on *approaches* to teaching. This makes a fundamental difference, in that the first speaks to the uniqueness of IL, while the second speaks to what can apply to general approaches that motivate students. However, both studies illustrate that content and teaching approaches are important with regard to student motivation in teaching and learning IL.

The challenge of motivating students into learning IL in African universities is compounded by the fact that most students entering university in developing countries lack basic IL skills (Lwehabura, 2007; Dadzie, 2009; Jiyane and Onyancha, 2010:19) and yet these basic skills are critical for university education and beyond. Lwehabura (2007) investigated the status and practice of information literacy for teaching and learning in four Tanzanian universities and found 74.5% of students studied had attended schools that did not have libraries and only encountered libraries at the university. Furthermore, 57.4% of the students from schools with libraries lamented that the libraries were run by students. Jiyane and Onyanchaôs (2010) study of IL education in academic libraries and LIS schools in South Africa revealed that lack of

basic information handling and computer skills for students when they join university greatly affected their IL learning experiences. Somi and De Jager (2005) studied the role of academic libraries in enhancing IL at the Fort Hare University Library in South Africa and found that more than half the students did not attend IL sessions, despite the sessions being compulsory. This outcome suggests that making IL a compulsory subject to students may not necessarily translate into increased student attendance at IL sessions. The factor analysis results (see Section 5.4.3 and Table 5.13) revealed that the library helped the students understand what information they were looking for and where to find it. Once they found the information, students were able to develop an insight into new approaches to issues or new forms of knowledge. These findings are closely related to Bruceôs (1997) conception of, or experience, of IL as a knowledge extension tool. Bruce posited that IL enhanced creativity and enabled students to gain new insights into a phenomenon.

The present study revealed that psychology students experienced IL as *learning how to use ICT to access, retrieve and manipulate information.* A descriptive analysis of studentsô computer and IT experience while learning IL (see Section 5.5 and Table 5.24) established that the most important computer and IT experience was the exposure of electronic sources of information to the learners. Computer and IT skills gained during IL instructions enabled students to easily access electronic information effectively. These results seem to suggest that IL training would not be separated from computer and ICT skills training. With much information being created, shared and stored electronically, using computer systems, effective IL learning cannot be feasible in the absence of computer and IT training. This was evidenced by the factor analysis done, which revealed that IL equipped students with skills to access information that was stored in databases and websites and enabled students to integrate their online learning experiences with face-to face situations, besides relying more on e-sources as a priority. Maybeeôs (2006, 2007) studies found students experienced information literacy as finding information using IT. To effectively find information, students had to learn how to use various technology applications and tools.

Maybee (2006, 2007), in a study at the California Polytechnic State University to understand undergraduate experiences in using information, found that IL was perceived to have facilitated the finding information from various sources by students. Maybee (2007), in another study on

women undergraduate experiences of using information at Mills College in the USA, found similar results. The results of Maybeeôs two studies and the findings in this current study suggest that positive information literacy experiences at undergraduate level can be realised in different situations and institutions, as long as the design of IL programmes gives an advance understanding of the way undergraduate students learn in IL. To find information, students must learn how to effectively use various technology applications and tools. Bruceôs model (1997) perceives IL as finding information from its source, understanding the structure of the source and how to use information sources independently or via an intermediary which, in this case, is the IT equipment. The model resulted from a study of higher educators in two Australian universities. Bruceôs model, which underpinned this study, describes IT as one of the two variables that are present in all the seven conceptions of information literacy. Although Bruceôs study and the current study saw ICT as playing an important role in IL, there is a slight difference in the focus of the two. While Bruceôs (1997) study considered ICT as a communication tool, this studyôs respondents emphasized ICT as a tool to search for and retrieve information.

Another study that found that IL was experienced as finding information using IT was by Boon *et al.* (2007). Their study of English facultyôs conceptions of IL in the UK found that ICT was used to retrieve and access information effectively and efficiently. They revealed that ICT made it possible to access materials in both textual and non-textual formats, including video clips. The focus of their study on the role of ICT and the current study are similar, although the main respondents are different, with the current study focusing on students while Boon *et al*. focused on faculty. Both studies had similar results, possibly because ICT used as a tool to find information only makes it an intermediary and there may not be significant differences, whether the users are students or faculty. The exact experiences of the different users are likely to differ but, as much as the focus remains on the use of ICT as a tool, there may not be significant differences.

Whether computers and ICT are seen as a communication tool or as a tool to retrieve and access information, they play a key role in IL teaching and learning. The current learning environment is technology biased and for students to be actively and effectively involved as consumers and creators of information, they require good information literacy skills. This goes

a long way in empowering students with needed information competencies which are key in the realization of an information society.

The present study found psychology studentsô experience of learning IL as enjoyable in smaller size classes. The results of a factor analysis (see Section 5.5.4 and Table 5.14 established the role of the environment in IL learning as the most important component. Students felt that adequate facilities, coupled with small class sizes, enabled the learners to enjoy and consequently perform well in their IL learning. This finding corroborated the lecturersô concerns that the large number of students per class was an impediment to effective IL teaching and learning (see results in Section 5.3, Tables 5.16 and 5.17). Biggs (1993) 3P model presents studentsô experience of learning as a process with three main variables: the environment, studentsô approach and expected outcome. He observes that learning environments directly affect learning outcomes and therefore students interpret their learning experience in relation to their environment. Biggs observes that this is propelled by the purpose for learning and students are keen to know why they should learn what they learn. Although the studies of Biggs were based on a generic approach to learning, the results in the current study have shown that the environment impacted significantly on the studentsô IL learning experiences.

As a follow-up to the question of the size of the class, a study by Bolander (1973) investigated the relationship between motivational level of students and class sizes. The findings revealed that class size substantially influenced motivational levels of students and affected teaching and learning. Todd (2012) studied the relationship between class size and learning English language courses in a Thai university. The results showed that students in larger classes, with more than 45 students, learnt less effectively than those in smaller classes. In the USA, Cuseoôs (2007) synthesis of research on the effect of large classes on undergraduate studentsô teaching, learning and retention, found that class size was a contextual variable that affected studentsô success. In Ghana, Yelkpieri *et al*. (2012) investigated the effect of class sizes on teaching and learning at the university level and found that, although lecturers disagreed with the notion that large classes affected the quality of teaching and assessment, students observed that attention to weak students in large classes was missing and remedial classes for struggling students were not possible in large classes. From the student perspective, small classes provide opportunities for students to participate in class and lecturers to easily evaluate lessons taught, and pay

attention to weak students. In the present study Bruceôs model of Seven Faces of Information Literacy does not explicitly address the issue of context or environment where IL learning takes place.

Psychology students experienced IL learning as personal *improvement of communication and writing skills* (see Tables 5.7 and 5.10). With 113 (87%) of the students indicating that they had gained written communication skills as a result of IL learning, and 108 (83%) agreeing that IL has enabled them to communicate ideas and knowledge effectively, the findings suggest that IL learning is critical to ensuring that students pass on what they learn. It is not enough to know how to gather information and knowledge if what is gathered cannot be effectively passed on. By exposing students to ethical and legal implications on the use of information and proper citations, IL enhances communication and writing skills. The number of students who indicated that IL did not enhance their communication skills were 22 (17%). This is low compared to those who stated that IL enhanced their communication skills, maybe because the respondents already had mastered the said skills or could not relate them with IL learning. Whatever the case, these findings suggest that IL is key in equipping students with communication and writing skills and more attention is needed in order to have students who effectively and correctly communicate information and knowledge they create or come across.

This finding relates to Diehm and Luptonôs (2014) study of university students' experiences of learning information literacy, in which they found that one of the ways students experienced IL learning was learning to use information to grow as a person and to contribute to others. The focus here is learning communication and writing skills, in order to properly apply information in society, for the benefit of others. This IL learning experience is related to Bruceô (1997) wisdom conception that describes IL learning to include learning to use information for the benefit of others, while observing the ethical implications.

6.2.2 IL Competencies of Fourth-Year Psychology Students

Another ingredient of understanding IL learning experiences of the students included establishing the competencies that fourth-year psychology students possessed. Understanding the competencies first required an elaboration of what the students were expected to know and

be able to do. To that end, the ACRL (2010) IL standards for undergraduate psychology students state that an information literate psychology student should be able to:

1. Determine the nature and extent of the information needed;
2. Access needed information effectively and efficiently;
3. Evaluate information and its sources critically and incorporate selected information into her or his knowledge base; and
4. Individually, or as a member of a group, use information effectively to accomplish a specific purpose.

Reinforcing the disclosure about the importance attributed to IL and the gains from IL learning, discussed in Section 6.5 above, this study revealed that most faculty and librarian respondents were generally not very happy with IL skill and knowledge level of students when they graduated from undergraduate programmes.

The following section looks at how the findings rated on the four ACRLôs standards for undergraduate psychology students. These ACRLôs standards represent the competencies that can be used to identify a psychology student as being information literate. Considering the first standard on the ability to determine the nature and extent of the information needed, the study (see Table 5.7) revealed that the majority of the students, 92 (73.5%), were able to define their information needs easily, with another 99 (76.2%) able to track down information indifferent formats easily. These two findings of the study are a reflection of the performance indicators of an information literate student (ACRL, 2000) and are closely related to Bruceôs (1997) findings that IL is experienced as gaining knowledge of sources of information found in different formats.

The second competence established was that students were able to access with much more ease, the information they needed. The study showed that slightly over half of the respondents, 70 (53.8), stated that they were able to access the information they needed effectively and efficiently, using the library online search tools (see Table 5.11), which could be attributed to the fact that the majority of the respondents, 115 (88.5%), indicated that they had adequate IT skills. Although the findings by Naidoo and Raju (2012), while investigating the impact of ICT on IL at the Durban University of Technology, were that basic computer skills were critical to

learning IL, the present study found that IL went beyond merely having basic IT skills requiring knowledge of using the IT skills to access the needed information. Fourty-five (39%) of those who indicated having good IT skills seemed not to comfortably access information they needed effectively, and efficiently using online search tools. Aside from using online search tools, the fact that students 92 (70.8%) were generally able to easily access the information they needed (see Table 5.11) could be an indicator of the confidence IL had given them for searching and accessing the information they needed. The competence to access information demonstrates Bruceôs second conception, that information literacy is experienced as finding information located in information sources (Bruce, 2003). In this conception, information literacy is seen as knowledge of the various sources of information and the ability to access the information therein directly or using an intermediary. Although Kavulyaôs (2003) and Baro and Zuokemefa (2011) studies found poor technological structure and limited IT skills among librarians as a major impediment to studentsô access to the information they needed, the present study suggests a change in IL training context, with more access to computers and librarians that are more IL literate that could be supporting studentsô access to information electronically. Improvements in information storage by students, using computers, supports Bruceôs (2003) conception that IL is experienced as controlling information which includes storing information in computers in order to allow ease of retrieval.

Another competency attained was analytical and critical thinking skills. The study established that most students 111 (85.4%), were able to evaluate information and its sources critically and incorporate selected information into their existing knowledge base (see Table 5.7). This could be an indication that analytical and critical thinking skills have been imparted to the students, making them careful users of information. This is confirmed by their confidence in using information to solve different problems, 119 (91.5%), and confidence in tackling unfamiliar problems, 90 (69.2%). The attainment of analytical and critical skills by students is stressed by ACRL (2010) as an expected outcome of IL learning. Information literate students are expected to see beyond that surface value of information and be able to generate new knowledge from information they receive. The increasingly ease of access to phenomenal amounts of information, due to technological advancements, call for skills that will enable students to evaluate and sieve the information for what is relevant and needed. According to Grafstein (2002), IL provides the needed critical approach to the use of information that enables students

evaluate information for authenticity, accuracy, credibility, authority, relevance and bias, which aligns with Bruceôs (1997; 2003) wisdom conception. Bruce, in her study of information literacy in higher education, posited that information literacy was experienced as using information wisely, which included exercising judgment, making decisions and doing research.

Students were found to have developed the ability to effectively use information to accomplish a specific purpose. The impressive rating on the fourth standard, that a psychology student must be able to use information effectively to accomplish a specific purpose, 99 (76.2%), could be an indication that the students had mastered skills in the appropriate use of information (see Table 5.7). Studentsô confidence in tracking down and using information in different formats could be evidence of their exposure to different sources of information (see Tables 5.7 and 5.10) and how to access information therein to address specific needs. The findings that the students were competent to communicate well in writing, 113 (87%), as a gain from IL further indicated that IL learning had succeeded in instilling skills to communicate the knowledge they acquire. However, referencing seemed to be lowly rated 2 (3.2%), a possible indicator that not enough attention was being given to it (see Table 5.10). The low attention given to citation management is further demonstrated by that fact that only 4 (33%) of the librarians interviewed cited it among the topics they teach. This could be calling for the need for IL instructors to be deliberate in teaching citation management to students.

In conclusion, since librarians in Kenyan universities are obligated to train students to be information literate drawing their mandate from the university education accrediting body (CUE, 2014), it should be their joy to see graduates and finally citizens that are information literate.

6.3 Goals of the Information Literacy Programmes Offered

The second research question sought to discover the goals of IL in the universities surveyed. The extant literature revealed that key goals of IL mostly revolved around training students to effectively access, critically evaluate and use information, and apply skills learned to future challenges (Bruce, 1997; Breivik, 1998). These generic goals are aimed at training students to become critical thinkers and lifelong learners and to be able to learn how to learn (ALA, 1981; Grafstein, 2002:198). Bruce (1997) observed that the concept of lifelong learning had been at the heart of IL over the years. The IL programme aims at preparing students *to learn how to*

learn, by giving them skills to evaluate and sift through the volumes of information and identify quality information sources for their needs. This study found that the main objective of the IL programme in the universities surveyed was *to make students independent learners, and be able to access information in the different formats*. Independent learners are those who have learnt to learn on their own, commonly referred to as lifelong learners in IL literature. Breivik (1998) stresses that developing lifelong learners should be the key objective of information literacy initiatives. The current study established that another goal of IL was to familiarize students with library resources available in their areas of study and how to use them for doing their class assignments.

The stated IL goals need deliberate strategies to ensure they are achieved. To realize these goals, the present study revealed that only those librarians with a post-graduate qualification (see Table 5.5) were allowed to teach IL. The librarians surveyed were also experienced, with 76% having taught for more than 10 years (see Table 5.6). The lecturers teaching IL either had doctorates (see Table 5.4) or were pursuing studies at doctoral level. The qualification of lecturers who were involved in teaching IL or IL-related courses and their many years of working experience (see results in Tables 5.3, 5.4 and 5.6) suggested the importance university management attached to lecturing. Selematsela and du Toit (2007), in their study of the South African academic librarianôs competence in teaching IL, found that those teaching IL skills required a certain level of knowledge and skills that would make them fit to effectively teach IL (see more discussions on IL training for IL teachers in Section 6.7).

The findings of the document review in the universities surveyed identified other goals of IL, which included *equipping library users with the required skills to explore library resources to meet their information needs.* This goal was explicitly expressed and focused on sharpening the information seekersô knowledge and skills in information-searching from different sources. Hepworth (1999) investigated IL and skill levels of undergraduates in Nanyang Technological University in Singapore and found students unable to access the information they needed. The significance of IL skills led to the development of a framework that would see IL skills included in the undergraduate curriculum at the university. Similarly, in a study of undergraduate information literacy skills at Kent State University, Kunkel and Weaver (1996) found that even though many students were aware of OPAC and Indexes, they lacked the skills

required to use the tools to acquire the information resources they needed. Imparting appropriate IL skills to students remains a key goal for IL programmes. The other goal of IL identified was to *develop and apply various communication techniques through information analysis, interpretation, clear and critical thinking, organization, problem solving and library research.* This goal resonates with Bruceôs (1997) *knowledge extension* and *wisdom* concepts, which focus attention on information use. The knowledge extension concept views IL as using intuition or creativity to gain new insights, whereas the wisdom concept views IL as using information wisely, for the benefit of others through problem solving.

Documentary analysis affirmed the information given by respondents to interview questions, by showing IL goals clearly stated and aimed to turn students into lifelong learners who were able to access information. However, the curricula analysed were not only for IL but for a general Communications Course for all first-years and only had a library section. This required a closer look at the general objectives and goals, to pick what concerned IL which was incorporated in this study. The teaching presentations did not have clearly stated objectives, which suggested that those teaching might not have found it important to put the objectives they stated in interviews onto the teaching materials. It therefore means that most of the objectives were captured during the interviews.

This approach by librarians to teach without outlining clear objectives could be a confirmation that most librarians teaching IL are either not trained or lack a pedagogical background (Selematsela & du Toit, 2007); and a confirmation of the concerns of students on the quality of teaching methodology of librarians (see Section 5.7 and Table 5.32). In their study of librariansô competence in teaching IL in South Africa, Selematsela and du Toit (2007) carried out a literature survey and an empirical study. They found a dire need for librarians to be trained on the various dynamics that surround teaching, but more specifically teaching IL. The authors developed a framework to guide implementation of the training, stating clear performance indicators for librarians teaching IL.

Jiyane and Onyancha (2010:16), in their study of IL in academic libraries and LIS schools in South Africa, found libraries had clearly stated IL goals to ñenable students to access, select and utilise resources effectively; Market the library and its services and resources; Teach

students how to find correct information, evaluate it, understand the legal implications when using information; and Assist students in writing their assignments.ò Duchastelôs (1977) study on teaching objectives at Florida State University found instructional objectives and goals very important in providing direction to the instructor, and concentrating on the relevant aspects of the instruction to the learner. The present study has revealed that IL teaching and learning for psychology undergraduate students is missing an important aspect by lacking clear objectives. However, Grafstein (2002) observed that, whereas critical thinking skills and development of lifelong learners are among key IL objectives, they are generic and can therefore apply across disciplines. Such skills, when learnt, can be applied to solving current problems and future new problems that may arise.

6.4 Content of IL Instruction and How it is Taught

The third research question sought to establish pedagogical approaches used in IL teaching and learning. Findings revealed that approaches to teaching and learning information literacy ranged from individual skills training to full-fledged sections of examinable courses, with most being conducted using the face-to-face lecture approach. However, only one library website of the participating universities visited showed some initiatives on a small scale, that offered instruction on the use of some information sources. Specific instructions on the library website included how to access electronic books and journals and how to access library holdings using the OPACs. The ACRL Psychology Information Standards (ACRL, 2010) map the Information Literacy Competency Standards for Higher Education (ACRL, 2000) into the domain of psychology. These standards, specifically designed for undergraduate psychology students, are supposed to give psychology liaison librarians and lecturers a tool that organizes IL instruction, thereby giving a basis for collaboration between librarians and lecturers. The standards address content and evaluation of IL instruction by giving specific competencies expected that are measurable.

However, findings from this study did not show evidence of the content that was being offered by librarians and lecturers having any design connection with the ACRL standards. In a study that investigated effectiveness of IL delivery in Tanzanian universities, Lwehabura (2008) found that lectures, seminars and use of websites were the prominent ways of teaching information literacy. The study revealed information search skills, evaluation and use of

information sources and use of library facilities were among the key topics covered in IL sessions.

The other type of IL content taught included how to use the library online catalogue (OPAC) and the different types of information sources. A study by Fabunmi and Asubiojo (2013), on awareness and use of OPAC by university students in Nigeria, revealed that the majority of students lacked skills to use OPAC, with a significant number not aware if its presence and importance. In Malaya, Ariyapala and Edzanôs study (2002) of OPAC use behaviour by foreign students at the University of Malaya revealed that most students had trained themselves on how to use the OPAC. However, those who had attended library training on OPAC use reported greater success than their counterparts who had not attended any formal training. Byerly, Downey and Ramin (2006) investigated studentsô use of OPAC before and after library instruction at the University of North Texas, using an online tool developed by librarians. The findings revealed that the use of the OPAC had greatly increased after library instruction sessions. These studies illustrate the importance of training in the use of library resources.

The current study revealed that IL instruction extended to include accessing and using e-journals and handling information using ICTs. Training on the use of electronic journals ranked highest among respondents. Rosenberg (2006), in a study of the state of digitization in university libraries in sub-Saharan Africa, found many libraries owned or had access to e-resources, but little training was offered to librarians and students on the use of these resources. The study, which covered 107 libraries in 20 countries, further revealed that facilities for accessing e-resources were poor, with many libraries lacking adequate computers and reliable internet connectivity. Similarly, Sharmaôs (2009) study on the use and impact of e-resources at Guru Gobind Singh Indraprastha University in India revealed that though e-resources were adequate, infrastructure for accessing them was inadequate. Moreover, library users were not trained on how to use the resources.

Library tours and orientation for first-year students were other areas that offered students an opportunity to learn IL. Tours and orientation have remained popular ways of introducing new students to the library (Kavulya, 2003:219); notwithstanding the fact that they are usually done when new students are settling down in the university and so not much attention is paid to the

process. In his study of Kenyan universities, Kavulya (2003) surveyed first-year orientation programmes, including handouts that explained library systems, resources and services, tours conducted by library staff, and short demonstrations of how to find resources, using the various search tools. The limited time that is given to orientation and the timing at the beginning of the semester do not favour effective learning, since the process is usually hurried and the first-year students are still acclimatizing to the new environment. To address the challenge of limited time to offer IL, many libraries have developed videos that are used for orientation (Nipp & Straub, 1986). Kraemer *et al*. (2007) studied three IL pedagogies and concluded that online orientation should be one component of IL and must include a face-to- face interaction for it to be effective. Although use of videos and internet give the flexibility that students need with regard to the time and speed at which they can go through an orientation process, Kraemer *et al* in their study, recommended a blended approach.

Bruceôs model within the context of information sources conception details how learning IL should incorporate learning the nature and character of various information sources. The model clarifies that learning about available sources of information must be followed with knowledge about the use of sources. In this regard, content of IL in Kenyan universities focused on understanding available sources of information and how to access the information therein. This is illustrated by the teaching of how to use of OPAC, searching and evaluation of online resources.

The present study found faceï to-face to be a common approach to IL teaching and learning. Johnston (2010) found, in a study on the use of online IL instruction at James Cook University in Australia, that the flexibility and self-paced delivery of online IL made it more effective and attractive to more students. However, some students felt that the face-to-face approach had its merits. The overwhelming support for the online IL instruction could have been a result of the students interviewed being off-campus, since they did not often study from the campus. The effectiveness of online mode in teaching IL was not limited to off-campus students, as pointed out by the study of Lindsay *et al.* (2006) that assessed online IL tutorials at Washington State University and found that that tutorials that were strategically linked to the library website improved IL experience of the students. Farrel, Driver and Weathers (2011) studied the West Kentucky Community and Technical Collegeôs use of online orientation and found it suitable to

their online students. Content taught included PowerPoint presentations, scripts and other recorded tutorials posted on Blackboard. Smith and Oôhaganôs (2014) findings, in a study done at the University of Alabama and West Michigan University of Medicine, found that online IL popularity among off-campus students was high. On-campus students, just like the offï campus students, utilized the online IL facility due to its flexibility. The study recommended more online library training for students. Technological and infrastructural challenges (see results in Table 5.31) were found to greatly affect online delivery of IL in the Kenyan universities surveyed.

Use of email and social media, especially Facebook, were found to be other ways IL was conducted in Kenyan universities. As earlier pointed out (see Section 6.2), students experienced IL as learning by interacting with other people (Diehm & Lupton, 2012:219). The use of social media only provides the platform for interaction, which is important to note, since it had curriculum design implications. Spiegelman and Glassô (2008) study sought to explore the use of Web 2.0 to deliver IL instruction and facilitate library-faculty collaboration at Nassau College of the State University of New York. The findings revealed great success in post-semester assessment. Students were more comfortable and enjoyed gaming as they learnt. Web 2.0 gave teaching and learning more flexibility, thus attracting the attention of students. In the game, students are engaged and continue their learning until they succeed. Additionally, Williams (2010) surveyed several studies on the adoption of online IL teaching and learning tools and their influence on undergraduate studentsô learning experiences. The results found that online IL tools that included course management systems, institutional websites, blogs, screen casts, podcasts and web games had a positive influence on the learning of students.

In their study of factors that enhanced student motivation in institutions of higher learning in the United States, Rugutt and Chemosit (2009) found evidence that student-student relationships were more important determinants of educational success, even more than the traditionally believed student-lecturer relationship. An investigation of the IL learning environment by Johnson (1981) revealed that peer influence was significant in shaping the aspirations and actual achievements of students (1981:5-6), yet it was not emphasized in institutions of learning in the United States. He reasoned that effective student-student relationships were critical to the overall development of the student. While discussing the need

to rethink IL, Marcum (2002) posited that a successful educational practice must take into consideration the social context where learning takes place. He further noted that focus on learning methods was as critical as on the content of what is learnt. Being aware that student-student interactions had a bearing on the success of students would, no doubt, affect how IL was taught. IL instructors need to restructure their lessons to give adequate time and to create an enabling environment for increased student-student interactions.

According to Bruce (2004, 11), the significance of IL goes beyond the academy into the entire society, requiring a broader look at how it affects society. This view is supported by Secker (2009), who found IL to be crucial for economic development, health, citizenship and the general quality of life. Similarly, several authors (Druker, 1992; Cheuk, 2002; Rockman, 2004; Irving, 2007; Amalahu, Oluwasina & Laoye, 2009) have emphasized the significance of IL in other sectors of society, in addition to education. The structure and content of IL may therefore need to be revised in order to include broader objectives and roles that IL seeks to bring to society as a whole, and not just the academic world.

6.5 The Role of ICT in Information Literacy Learning

The fourth research question was aimed at finding out the role that ICT played with regard to IL learning. The findings revealed that ICT had a great part to play in realizing effective IL learning, because it supported IL content creation, offered a channel of communicating the content and served as a catalyst to the IL learning process (see Section 5.5 and Tables 5.24, and 5.27). This could mean that librarians and educators can create IL learning tools faster, using ICT and the tools can be made accessible to learners whenever and wherever they are. This has an impact on the efforts educators have made over the years to improve instruction and learning. The reality of these efforts is the massive investment that higher education is putting in ICT. This gives an indication that ICT is critical in the teaching and learning process.

Prensky (2001) asserts that the life of todayôs students is wholly immersed in digital technologies, which require that the students are equipped with the right skills in handling digital information. Naidoo and Raju (2012) studied the impact of the digital divide on IL training in South Africa and found students struggled with online IL modules if they lacked prior access to computers and basic IT knowledge. The percentage of those who struggled

among the respondents (35%) was substantial. This situation, if not checked, could impede effective learning, because most of the information for academics is now produced, managed, stored and distributed using ICTs. Naidoo and Rajuôs (2012) study cautions the rush to adoption of IT in IL instruction, but it does not in any way discourage its use. Since the issues their study raises, especially of students lacking prior IT exposure, are true for Kenya (Kavulya, 2003), their findings are critical to this study. Even as respondents deem the presence of computers to enhance IL learning (Section 5.5 and Tables 5.32 and 5.33), Naidoo and Rajuôs study seems to indicate that the mere presence of computers is no guarantee of a positive IL learning experience for all students.

McClintock (1996), reflecting on the social construction required to build an education system enabled by digital technologies at Columbia University, found the major impact of technology on teaching and learning was the provision of abundant information resources. McClintock further asserted that ICTs were responsible for the increased volume of information as they made its production fast and easy and made it easily accessible. Coming to the African scene, De Jager and Nassimbeni (2003) traced the interest in IL to the advent of ICTs in the information industry. The introduction of ICTs required information professionals and users to obtain knowledge and skills to effectively manipulate information in the new environment. Bruce (2002) observed that IL became a basic requirement for one to survive in the rapidly changing technological environment that Keenan (2010) refers to as the information age. Keenan noted that the influence of the information age on IL is that students needed information to function effectively.

The present study found the use of the internet, and especially YouTube videos, to be another impact ICT had on IL teaching and learning in the Kenyan universities surveyed (see Section 5.5). In-depth interviews with lecturers and librarians revealed that affected areas included IL content, where video clips were incorporated, presentation, where LCD projectors and PowerPoint slides were incorporated, and the internet generally that provided case studies and information resources for IL lesson preparation and further reference for students. In South Africa, a study of the impact the digital divide on information literacy training in two universities, by Naidoo and Raju (2012), found digitally advantaged students comfortable with online IL learning, compared to those who were disadvantaged. Digitally disadvantaged

students required to be introduced to computer basics, before participating effectively in online IL learning, thereby slowing down the IL training process. To address the challenge the study suggested application of various teaching and learning methods that would ensure both advantaged and disadvantaged students learnt IL effectively. The discussion above illustrates the understanding among respondents that ICTs provided important channels of delivering information to the intended audience. Today, many learning environment designs include web-based technologies that are suited for delivery of IL (Brown 2002:3). The information technology conception in Bruceôs model (1997) supports the findings in this study that ICT has a great role to play in IL teaching and learning. Bruceôs model acknowledges that access to information requires skills and knowledge, since the information might be in different formats and stored in different ways.

IL training resources and tools can be uploaded and made available to a larger readership and viewership, both on campus and off-campus, through various ICT initiatives. This is beneficial when students have the knowledge and skills to understand and evaluate information being sent through digital media. Johnston (2010) evaluated the use of online tutorials in a study at James Cook University in Australia. The results indicated that students commended the ability to study IL at their own pace and time and the transferability of the skills learnt to other disciplines. Gravett (2010) explored the impact of adding an online video to the IL module at the University of Surrey in the UK. The findings revealed that design and implementation of the project was time-consuming. The results showed that the objectives of the project were realized, with students being able to access IL instruction at their time and pace, thereby enhancing IL at the university. Similarly, Levesque (2003) explored the process of developing and implementing an online IL course at St. Petersburg College in Florida, USA. The results found that, apart from the benefit of reaching more students with IL teaching, a richer way of teaching and learning IL was achieved. One challenge faced was the requirement for constant revision as technology kept changing. In Africa, Mutula *et al.* (2006) explored the design and implementation of an online IL module to first-year students at the University of Botswana. The findings revealed that online IL instruction could be a better approach, compared to face-to-face, in developing studentsô IL competency, even though students preferred a blended approach to a single learning method. The findings further revealed that online IL instruction did not reduce the workload for either students or staff.

The present study found the use of overhead projectors, laptops and desktops prevalent in the delivery of IL in the universities surveyed (see Section 5.5). Some respondents stated, ñcomputers and LCDs added visuals to the processò. Another respondent said, ñsocial media and email made interaction possible, easy to teach due to automationò and ñIL teaching relies on ICT, since information is digital.ò According to Julien and Given (2003), teachers of IL make use of list serves to communicate with each other and share developments in IL teaching. Students, too, use the internet to exchange ideas and this builds a collaborative approach to learning IL. Students can contact their teachers and communicate with them using communication and tutoring software. With several IL self-learning programmes on the net with rubrics, students can check how well they are doing in IL learning. In an ICT environment students are able to learn IL at their own time and pace. Even with the knowledge of the positive impact that ICT has on IL Learning, its introduction must be gradual and planned. McCormick & Scrimshaw (2001) found that advance preparedness in the way teaching was done led to a positive impact of ICT on IL.

Gurney and Wilkes (2008) studied the impact of ICT on teaching and learning IL to first-year applied science students at the University of New England. In their study, they found students who applied search strategies and guidelines provided by librarians to find resources they needed for a given unit gave more and complete citations of articles and got higher grades compared to those who did not bother to use the libraryôs IL instructions. However, they observed that, despite being able to receive IL instruction online, students still struggled to make critical evaluation to understand the information they were accessing. To address this gap, Williams (2010) suggested that, instead of the traditional IL tutorials, other approaches that included embedding IL in course management software, use of blogs, online academic websites, screen casts, podcasts and three-dimensional environments be explored. The implication of these studies to the current one is that the rapidly changing ICT environment requires IL instruction to be at par in order to provide effective IL experiences to students. Knowledge of using technology tools, is one aspect of IL that is sometimes confused to mean IL literacy. However, as Barbour, Gavin and Canfield (2004) observed it is not enough to train students in the basics of using IT tools but rather they should be trained to use IT tools to explore, evaluate and utilize information to understand and generate knowledge.

6.6 Perceptions of Students and Staff towards Information Literacy

The fifth research question aimed at revealing the perceptions of students and staff towards information literacy. To understand their perceptions, student respondents were requested to state their understanding of the concept of information literacy. The findings showed that students perceived IL as possessing a skill to find information (information sources), the ability to use information for various needs, including research (information use), the ability to develop a knowledge bank on a given concept (knowledge creation), as reflected in findings in section 5.6.1 (Tables 5.28 and 5.29). These perceptions by students of the concept of IL were broadly similar to what was held by the lecturers, that IL is the ability to get information or understanding how to access information (see results in section 5.6.3 and Table 5.30). Librarians also understood IL as access to information and the ability to use information to meet an information need (see results discussed in section 5.6.2).

According to Diehm and Lupton (2014), how people experience a phenomenon is shaped by how they perceive and understand it. A proper understanding of the IL concept is considered crucial to experiencing the IL phenomenon. It gives a picture of what the one who experiences the phenomenon knows or thinks about its essence. IL understanding from the studentsô perspective is significant in enabling lecturers and education administrators to design effective and relevant teaching and learning strategies that enhance IL (Lupton, 2008: 400). According to Biggs and Watkins (2002), our experience/conceptions of teaching and learning influence our practice and have a bearing on learning outcomes. IL may be experienced in a variety of ways, differing from each other, as dictated by internal and external factors to those experiencing it. Differences in experiencing IL will influence how IL teaching and learning is designed in curricula and practised. In this regard, respondents were requested to state their understanding of the concept of information literacy. In her study at the California Polytechnic State University, Maybee (2006) found undergraduate students perceived information use in three ways: knowledge of information sources, initiating and carrying out a process and building a personal knowledge-base for various purposes. This perception partly covers what is in the ALA (1989) definition of information literacy that refers to information literacy as the ability to recognize an information need, locate and access the needed information, evaluate it for accuracy and authenticity and use the needed information effectively.

The perceived significance of IL goes beyond the academy into various occupations for daily decision-making and problem-solving. Exponential information growth that is further facilitated by growing technological developments requires that students and information users have the requisite skills for accessing and using information in its various formats. Lack of information skills leads to a population with a deficiency that IL learning can address. The significance of IL in this regard is demonstrated by UNESCOôs IFAP (Information for All Program 2006) declaration that, ñEverybody should have the opportunity to acquire the IL skills in order to understand, participate actively and benefit fully from the emerging knowledge societies (Horton, 2008).ò Acquisition of IL skills will lead to development of lifelong learners. According to Koneru (2010), LIS practitioners need to find ways of imparting IL skills to the widest audience and not only be limited to academic institutions.

Bruceôs (1997) model that underpinned this study proposed a relational approach to teaching and learning IL. For Bruce, teaching is a process through which students experience seven ways of looking at IL. Firstly, students experience information literacy as dependent on information technology. Technology is used for information retrieval and communication. Availability and usability of technology therefore become fundamental to IL. Secondly, IL is experienced by students as finding information from the various sources it is located in. Knowledge of how the various sources are structured helps the students access the information more quickly. Thirdly, information literacy is seen as executing a process. IL is seen as being equipped with the ability to confront any new situation because of the skills of finding information needed that IL has created. Fourthly, IL is seen as controlling information, where the student is in charge of storing and using information, when needed. Various means of storage are included, to ensure the student is in charge. Fifthly, IL is experienced as building a personal knowledge base in an area new to them. Sixthly, IL is experienced as knowledge extension, using knowledge acquired to creatively gain new insight. Wisdom conception is the seventh and final way IL is experienced. Bruceôs model looks at learning to be information literate as being aware and reflecting on the different ways of using information for different purposes.

How teaching and learning IL is perceived and conducted becomes critical to how students experience it. Bruceôs relational approach advocates a more reflective approach to teaching,

where students take time to think about the various aspects of information use. Studies have found students perceived IL as an important component of university education and therefore very valuable (Hart & Davids, 2010). The findings from the universities surveyed showed that IL was perceived as empowering students to do good research and expand their knowledge base (Table 5.29). This included the ability to gather needed information for research papers and communicate the results in a better way. In this regard, respondents indicated that IL was important because it enhanced their communication skills and felt it should be offered as a foundational course at the first-year level. The results of the factor analysis (see results in Section 5.6.1 and Table 5.29) on the gains that could be obtained in IL learning by the students extracted two principle components. The perception was that there was confidence in tackling unfamiliar problems once a student is equipped with IL skills. These skills would, in turn, lead to the ability to communicate knowledge and ideas effectively and also for problem-solving. Bruceôs model (1997) discusses the knowledge extension conception that captures some of the aspects raised by these findings, such as the ability to handle unfamiliar problems, effective communication of information and creative ways to handle problems based on an existing knowledge base.

Specific benefits from IL learning, as perceived by respondents, included empowerment for research, expansion of oneôs knowledge and computer skills, better communication skills, promotion of resource awareness, enabling one to explore new worlds, information handling competence and being equipped with information skills to access resources. Information literacy was perceived to benefit research and communication greatly, with few benefits outside the academic world. The respondents were able to single out specific benefits that enhanced their research, including being able to do proper citations and being able to effectively gather the information resources they needed for their term papers. The respondents specifically mentioned gaining computer skills and knowledge in the course of learning IL. The three categories of respondents, namely librarians, students and lecturers, all mentioned the centrality and significance of ICT in teaching and learning IL (see Section 5.6.2 and Table 5.30). This finding explains why lack of facilities, and especially computers, was found as the most significant challenge in teaching and learning IL (see results in Section 5 and Table 5.31) and the role of ICT in IL learning, discussed at length in Section 6.5 of this chapter). These

findings suggest that, for effective IL teaching and learning, adequate ICT facilities must be put in place.

The results in Table 5.8 show that students were able to communicate knowledge and ideas effectively, as a result of learning IL. They felt the amount of information produced was phenomenal, requiring skills to navigate and utilize the needed information. They believed having IL competencies enabled them to comfortably integrate new information into their knowledge base, thereby stimulating enthusiasm for further learning. Dangani (2009) pointed out that to prepare lifelong learners, students needed to think critically and use information well. He contended that for the survival of individuals, organizations or nations in the 21st century information society, IL skills were a pre-requisite. This studyôs findings show that, through IL, students were confident to organize and become responsible for their own learning. They were able to think critically and handle any problem using information available to them.

Supporting their own perception that IL was a beneficial addition to their studies, students indicated that they benefited greatly from IL by acquiring skills for accessing needed information from different information sources effectively. All four universities surveyed indicated that the key topic in IL teaching and learning was the use of OPAC. The findings revealed an increasing number of database log-ins and the verbal and email positive feedback from students which was attributed to IL. This finding was corroborated by librarians who indicated that they observed better and increased use of the OPAC after IL learning by the students (see results in Section 5.4.2.4).

The findings further revealed that 50% of the respondents indicated that collaboration between lecturers and librarians in teaching IL enhanced their learning. The lecturers felt that they should be at the forefront of IL instruction and these should be complemented by librarians. However, Badke (2008) stressed that, despite librarians and lecturers agreeing on the importance of IL, the librariansô focus was more on the process, while lecturers focused on the content, confirming Kuhlthauôs (2001) description of librarians as masters of resources and process, while lecturers were masters of the context and content of an IL initiative. In this regard, Grafstein (2002) advocates for sharing of teaching responsibilities between librarians and lecturers as a better approach than either of the two teaching IL delivery alone. This

complementary approach was supported by Dubcki (2013), whose study found the need to include librarians in the process of imparting the needed information skills to students. That way, more techniques of IL instruction can be discovered and different approaches will ensure students have a more comprehensive understanding of IL. Other studies supporting the collaboration between librarians and lecturers for successful IL interventions in African universities include Idiodi (2005:228), Dadzie (2007:27), Kavulya (2003:218) and Lwehabura and Stilwell (2008:188).

To give the perception of students on IL a broader context, the study found librarians and facultyôs perception of IL as an important tool for university students. Librarians understood and perceived IL as a process that enabled students repackage and use information effectively for their academic work, including how to access the needed information. Librarians further understood their role to facilitate IL skills learning among students, whether as a stand-alone course or part of an existing course (Davis *et al.,* 2011). This result corroborates Aharony and Bronsteinôs (2014) study of academic librarians in Israel which revealed librarians viewing IL as their mandate, although noting that collaboration with faculty would make IL instruction more effective.

Despite some of them not being familiar with the term ñinformation literacyò, the psychology lecturers indicated that IL learning was ñvery important, and was needed for all graduates of the university.ò Lecturers perceived IL as a tool that enabled people understand how to access, have the knowledge of, and use information in a fitting manner and therefore very important for students. This view is largely congruent with most of the earlier literature reviewed that revealed lecturersô perception of IL as very important for students (Gullikson, 2006; Badke, 2008; Saunders, 2012; Dubicki, 2013). For instance, words like ñcritical, ñabsolutelyò and ñessentialò were used by faculty from six disciplines in Saundersô (2012) study to describe the importance of IL for students in American universities. Dubicki (2013) studied the importance faculty placed on IL in eight New Jersey higher education institutions and found that most faculty members were familiar with the term and concept of IL and were very supportive of IL instruction given to students. Although many faculty indicated that they were already incorporating IL in their instruction, they felt that students were not fully equipped with needed skills at the end of the IL training programmes and suggested techniques that can be applied by

librarians and faculty to bridge this gap, including making IL a required course in the first year of university education.

Although lecturers overwhelmingly believed IL was important, the findings revealed that many did not seem to participate in IL activities. This corroborates Buryôs (2011) study among faculty at York University in Canada, which found faculty strongly acknowledged the importance of IL to students but were reluctant to incorporate it into their teaching. Bury found a ñdisconnect between faculty beliefs about the importance of IL and their teaching practices.ò Although the two studies were conducted in different countries, with different socio-economic development levels and using two different methodologies (survey questionnaire in Buryôs and interviews in the current study), the similarity of findings are likely to result from understanding among some faculty that librarians were good at IL and should be ñleft to do their jobò (Saunders, 2012 :230). This is likely to change if both librarians and faculty are clear on the role each plays in making students information literate (Ivey (2003), as illustrated in Dubickiôs (2013) study using online surveys to establish faculty perception of IL at Monmouth University in the USA. The result of the study found that IL was rated highly among faculty and was being incorporated in their learning outcomes in different courses taught.

Lecturers and librarians have complementary roles in IL instruction delivery. In her study, Ivey (2003) concluded that the place of lecturers in IL teaching and learning was significant. She investigated the working relationships between librarians and lecturers at the University of Waikato in New Zealand and found that successful collaboration between lecturers and librarians in IL instruction depended on the common and clear understanding of what IL entailed and how it was to be delivered. Clear understanding of the roles of each party in IL would ensure each played their rightful role to enhance studentsô learning experiencing IL. Furthermore, Saunders (2011: 226) observed that success of collaboration efforts between faculty and librarians required IL integration at programme and institutional levels, which called for a change in the curriculum and institutional policies.

6.7.1 Challenges of Teaching and Learning Information Literacy

The sixth research question sought to establish the challenges involved in learning information literacy by fourth-year psychology students. The students surveyed indicated lack

of adequate learning resources and facilities, such as computers, as the leading challenges (see Table 5.32). Access to reliable internet was found to be a challenge at Moi University owing to its remote location, 50km away from the nearest urban setting. Kavulya (2003) studied the challenges facing the delivery of IL in Kenya and found that, ñbeing unfamiliar with information technology, university students were reluctant to use electronic sources.ò Inadequate IT exposure at entry level in their university education affected studentsô information literacy skills acquisition. Kavulya noted that lack of ICT knowledge among university students was aggravated by lack of financial and human resources to train students in ICT skills.

Another hindrance to IL advancement was the lack of an IL policy framework at institutional or national level. This was demonstrated by the lack of enough time for IL, absence of a formal curriculum and inadequate facilities and staff. What stands in as a reference point in Kenyan universities are the guidelines provided by the Commission for University Education (CUE, 2014). The guidelines are very brief and read, ñthe university library shall facilitate academic success and encourage lifelong learning through information literacy and competency initiatives.ò The guidelines state that individual universities were required to come up with IL policies for their institutions, but the present study did not find any of the universities studied had an IL policy. Lwehabura and Stilwell (2008) studied challenges and opportunities of IL programmes in Tanzanian universities. The findings revealed lack of adequate resources and lack of an IL policy as key hindrances to IL teaching and learning. Hart and Davids (2010) investigated challenges to IL education in a South African university of technology and found that prior computer literacy enhanced IL among first-year students. But the lack of facilities, and specifically computers and internet connectivity, greatly affected studentsô access to, and use of, technology in their interaction with information. Bruceôs model emphasizes the importance of information technology for information retrieval and communication.

The present study revealed that qualified staff to teach IL were few, compared to the need for IL training (see Table 5.34). Challenges facing the delivery of IL in African universities have been found to include shortage of qualified staff to teach IL, its exclusion from the educational curricula and inadequate funding (Kavulya, 2003; Dennis, 2004; Idiodi, 2005; Lwehabura, 2007; Dadzie, 2007, 2009; Baro & Zuokemefa, 2011). Non-commitment by institutions to

offering IL has been demonstrated by the lack of clear policies and limited funding (Kavulya, 2003, Lwehabura & Stilwell, 2008). In a study on ñuser education programme at the University of Ghanaò, Dennis (2004) found that an inadequate number of qualified staff to instruct students during orientation was a major setback to IL initiatives. Similarly, Dadzie (2007) investigated information literacy in Ghanaian universities and found inadequate staffing, inflexible curricula, poor technological infrastructure and ignorance on what IL was about were key hindrances to IL teaching and learning. In a related study, Dadzie (2009), at two leading Ghanaian universities, revealed that the two universities enrolled about 9000 freshmen every year, but lack of adequate, qualified staff greatly affected IL teaching. Sitima-Ndau (2010) observed that the IL programme at Chancellor College, University of Malawi, was hindered by lack of facilities such as the internet and limited computer literacy among students. Inadequate staffing resulted in classes being overcrowded, exacerbated by increased enrolment over the years. Lwehabura (2007) investigated the status and practice of information literacy for teaching and learning in four Tanzanian universities. The findings revealed lack of institutional commitment as hindering IL initiatives in the universities, and suggested mainstreaming IL in the university curriculum.

Teaching approaches at most African universities do not encourage the students to find, critically analyse and synthesize information for themselves. This renders IL skills acquired useless for the studentsô academic life (Amunga, 2011). Normally, students tend to ascribe little value to any course if they do not see how it applies to their studies or life. Mlambo (2010) revealed that IL initiatives in higher education in Zimbabwe were becoming critical, with university librarians offering IL to students as an examinable course since 2004. Verlander and Scutt (2009) investigated teaching information literacy to large groups with limited resources at Liverpool Hope University. Their findings revealed that the best teaching approach was one that involved a variety of methods of delivery. They observed that approaches which actively involved the students and opportunities for students to demonstrate their understanding of what has been learnt, with support from instructors, worked best. Online tutorials were found to be preferred interventions for teaching IL to large groups (2009:41).

The current findings revealed that librarians and lecturers lacked formal training in IL. Lack of IL training for librarians around the world has been widely raised in the literature (Bruce &

Lampson, 2002; Rosenberg, 2005; Lwehabura & Stilwell, 2008; Bewick & Corrall, 2010), as a major impediment to IL teaching. Lack of training on IL among information professionals was found to be a major hindrance to the advancement of IL (Bruce & Lampson, 2002). The study that was done at the University of Washington and Washington State Library recommended training for information professionals to include the value and definition of IL; and training them to be able to train others. A study by Rosenberg (2005), which investigated the digital status of African university libraries, found the lack of IL training among librarians who offered user education to be a major challenge to training students to use library resources. The study recommended staff training that would cover preparing learning objectives, understand learning theories, ways of preparing lessons, personality and learning and different ways of learning. In their study in Tanzanian universities, Lwehabura and Stilwell (2008) found that some lecturers did not understand IL, with some confusing it with information technology. It is unlikely that lecturers who do not even understand the concept of IL can teach it. Bewick and Corrall (2010) investigated ways of developing librarians as teachers, considering their IL involvement and found that training librarians using a module as part of the curriculum for the professional training was favoured. Their study found less formal, on-the-job, training as a predominant way of contributing to librariansô pedagogical development. The results revealed participantsô desire for formal training, with the non-formal ones being used as complementary. For librarians already in service, regular short-term seminars and workshops were recommended. There is a need for formal IL training for librarians and lecturers to develop teams of instructors who understood the concept well and have the necessary knowledge for effective teaching.

Lack of set times for IL was found to be a challenge. The absence of a scheduled time for IL learning meant students were not able to plan their time well and when to attend IL training sessions. Earlier studies had shown that IL suffered inadequacy of time devoted to its learning (Kavulya, 2003; Rajaram, 2006; Chipeta, Jacobs & Mostert, 2008; Hart & Davids, 2010). The current study revealed that effective teaching and learning IL was greatly affected by its absence from the university class timetables. This is largely because IL is usually not part of the curriculum in most of the universities. The universities surveyed offered a library section within the common course on communication skills for first-year students (Kavulya, 2003).

Librarian respondents reported that, apart from the IL component in the communication course, they organized sessions to offer IL training on their own, which made IL look like a ólibrary issue.ô Kavulya (2003) and Lwehabura and Stilwell (2008) found that the library sessions in the general courses were not linked to any particular discipline, but endeavoured to introduce students generally to available resources in the library. Kavulya noted that the communication skills course did not give the library sufficient time to offer effective IL instruction and, sadly, librarians were not involved in the design and, in many cases, delivery and assessment of the course. This challenge necessitates a relook at the place of IL in universities in Kenya that must be addressed at policy and administrative levels, in order to accord IL a place in the curriculum. Otherwise, as Hart and Davidsô (2010) study of IL initiatives at the Cape Peninsula University of Technology in South Africa found, the limited time given to IL will remain a major setback.

Closely related to time allocated to IL was the problem of the unavailability of students during IL sessions. Librarians voiced concerns that it was not easy to get students to attend IL lessons. Some librarians attributed this to the busy nature of current students, who had several other responsibilities, apart from being students. A study by Lwehabura and Stilwell (2008), which investigated the status of IL in Tanzanian universities, found that students expressed unwillingness to learn IL. The study revealed that ñsome students tended to take IL for granted, assuming that they had adequate knowledge and skills to use the various information resources, or simply think that they could learn on their ownò (p. 186). Some key factors that affected studentsô attitudes towards learning included ñperceptions and interest about learning, their competence and motivationò (Candeias, Rebelo & Oliveira, 2008). Students who did not understand the importance and significance of IL for their studies and life were unlikely to attend an IL session on their own volition. Therefore students needed to be made aware of the importance of IL and how it could affect their lifelong learning behaviour.

A lack of collaboration between librarians and lecturers was found to create an obstacle in IL teaching and learning. Absence of librarian-lecturer collaboration for the delivery of IL has been highlighted by Kavulya (2003), Rajaram (2006) and Amunga (2011), as major hindrances to IL provision in Kenya. Whereas it is good for the library to champion IL, Breivik (1998) and Selematsela (2009:39) observed that IL should be the function of the entire university and not the library alone. Success in IL learning requires concerted efforts of all stakeholders in the

university and should not be seen as the sole responsibility of librarians (Owusu-Ansah, 2005). Collaboration between librarians and lecturers would ensure that IL appears on the timetable, like other fully fledged courses. According to Kuhthau (2001), lecturers have content, while librarians are experts in resources and how to access the resources. Merging the two experiences would ensure students have the best IL learning experience that is discipline-specific (Arp *et al*., 2006). Webber and Johnston (2006) stressed that partnership between faculty and information professionals was critical for the realization of an information literate university. But a number of questions would still have to be addressed, for example, how far can librarians be involved in curriculum development and planning? Can lecturers find time to sit with librarians and work on the curriculum together? These fears emerge from the realization that most librarians are not trained in curriculum development and teaching methodologies.

The view that IL must be integrated into the different university curricula has been advocated for in the IL literature by several authors (Webber & Johnstone, 2001; Johnstone & Webber, 2003; Owusu-Ansah, 2007; Badke, 2008; Saunders, 2011). Advancing this approach, Badke states that if IL is adapted and integrated in various subject disciplines, students would experience IL in appropriate ways within their disciplines. This approach would make IL contextual to whatever discipline was being taught and thus resonates more with students in their various specialisations. The findings of Lupton (2008), in a study of IL experiences of first-year university students at Griffith University in Australia, support integrating IL in specific disciplines. Lupton explained that IL learning within a course context clearly influenced student IL learning experiences greatly, by enabling them to go beyond common dimensions of IL. Integration of IL in disciplines will ultimately foster close working relationships between librarians and faculty and librarians and students, leading to a richer and deeper IL learning experience by the students (Jacobs, 2010; Johnston & Webber, 2003).

There are emphatic opinions that IL should be considered a discipline of its own (Barbour *et al.*, 2004). The California State University Bakersfieldôs IL initiatives revealed that ñstudents learn IL competency skills best when the skills relate to a particular course.ò (Barbour *et al.*, 2004:7). Furthermore, Badke (2008) cautioned that ñinformation literacy would not become a reality until it is elevated to the status of an academic discipline that has a confirmed role

within the curriculum.ò Badke (2008b) listed ten reasons for IL to be made a credit course including : Information literacy is crucial to a full education, students need the skills to enable lifelong learning, skilled research is a crucial part of many careers, students are not learning good research skills with existing methods, the complexity of the new information environment provides significant material for credit instruction, we are paying a fortune for resources not being used to advantage, the tools of research are complex, simplifying our tools for a lower level of skill is not working, to learn research you must do research in a training mode and information literacy is a credible academic subject. These reasons emphasize the critical part that IL plays in the academic journey of students across disciplines. Johnston and Webberôs (2003) case study at Strathclyde University confirmed IL as a valid topic, with its own theory and practice. These findings suggest that a credit-bearing subject is likely to receive more acceptance from students than if it was part of another course and it would make more impact on their IL learning experience for the particular subjects.

Rushton and Lahlafi (2013), in their study of the value and impact of cross collaborations in developing student information and academic literacy skills at Sheffield Hallam University, UK, found that a collaborative approach added value to studentsô learning experiences. Collaboration between librarians and faculty resulted in student information and academic skills progression. Moreover, students better understood the importance of research skills while at university and when in the workplace. Their study revealed that lecturers believed collaborations validated the need for a holistic approach to student learning, harnessed expertise available in the university to embed information literacy and introduced new perspectives and ideas to the modules. Furthermore, lecturers were of the opinion that collaborations between them and librarians improved the use of information resources and enhanced critical writing and deeper reflection on their academic practice. Librarians found collaboration invaluable, as it validated their role in the classroom and facilitated true embedding that helped students see the connection of learning IL for studies and lifelong learning. In addition, assessments were found more effective in collaborations, as they enabled students to reflect on research skills development in their areas. Collaborations also resulted in increased usage of information resources at Sheffield Hallam University.

Bruce (2001) stated that librarians are supposed to be the ones who initiate collaboration with lecturers, by reaching out to lecturers to cultivate good relationships. In this regard, librarians need to enlighten lecturers on the importance of integrating library research into their disciplines, by way of assignments given to students. This would help overcome the negative attitude that some librarians hold against lecturers (Julien & Given, 2003). In their study, Julien and Given found librarians perceived lecturers as stubborn and ignorant of the library and what librarians did and were therefore unfit to teach IL. Negative attitudes could kill any collaborative efforts. Lecturers were likely to harbour negative attitudes towards librarians as well. Conversely a survey at Feng Chia University in Taiwan by Cha and Hsieh (2009) on faculty attitudes toward collaboration with librarians revealed positive attitudes. Most lecturers welcomed joint design of activities for their teaching units. It is therefore imperative that both librarians and lecturers work on their attitudes towards each other in order to foster an environment that will allow for collaboration among them.

Collaboration needs to go beyond librarian-lecturer level and include academic administrators and all other stakeholders in the university (Rockman, 2004; Saunders, 2011:226; Baro & Keboh, 2012:314). The results of the present study established the need to involve academic and other administrators in the university in issues concerning IL, its teaching and learning. Academic administrators play a key role in the provision of resources and facilities for IL teaching and learning and providing the general conducive environment for IL. They need to be brought up to speed with what IL is about and its significance in university education, in order to offer informed infrastructure support. Lockerby *et al.* (2008:245) observe that successful implementation of IL programmes call for the support and involvement of all stakeholders in the teaching and learning process. These authors concluded that responsibility for successful integration of IL in the curriculum depended on everybody involved in education. Since IL equips students not only for academics but for life as a whole, support of administrators is highly needed for successful IL programme implementation. ACRL (2012) emphasizes the need for inclusion and active participation of faculty, administrators, librarians and other professionals in designing and teaching information literacy. Saunders (2011) concluded that, when institutional top leadership support IL, integration into curriculum collaboration becomes easy, as policies are developed and implemented faster.

Teaching IL is faced by several challenges, because IL is a complex subject of study (Limberg, 1999) and educators teaching it are bound to transmit their inexperience of IL to their students. The complexity of teaching IL could have led Bruce (1997) to advance a relational approach that presents IL learning as learning to conceive how information is effectively used. Bruce discusses seven faces that could help students understand IL deeper and from different perspectives. In this way teaching remains facilitation for students to experience information literacy in different ways.

6.7.2 Ways of addressing IL Teaching and Learning Challenges

When asked how to resolve the challenges impeding IL implementation, the respondents indicated the need for the administrators of universities to invest more in facilities, mostly computer infrastructure. Another way is to review curricula and make IL a mandatory and examinable course. The respondents believed IL instructors needed to adopt a different teaching approach from the lecture-based system. A more engaging approach, which is student-focused and allows students to interact more, was preferred. Such an approach would include an active learning model, where the student is the focus of learning (Barbour, Gavin & Canfield, 2004). A proposal to have lecturers and librarians trained in IL, in order for them to effectively teach the programme, was advanced. Some of the lecturers specifically indicated that understanding what IL was about was enlightening and an eye-opener. Training lecturers and librarians on IL would be likely to improve the content of IL, as well as its delivery. To make more impact in IL training, the training that librarians need to undergo must include instructional strategies and techniques that are informed by an understanding of the pedagogical theory and general educational initiatives in universities.

Increasing student enrolment in the universities surveyed calls for a corresponding increase in the number of staff to teach IL. The respondents strongly recommended sensitizing and training other members of the university community, such as academic administrators and faculty, on the importance and role of IL in university education. This study reinforced the findings in earlier studies that advance the view that IL should not be left to librarians alone, but be embraced by all stakeholders in the university (Breivik, 1998; Selematsela, 2009; Johnston & Webber, 2010; Barbour *et al*., 2004). For example, the success of IL initiatives at the California State University is attributed to, among other things, the active involvement of the academic

administrators (Barbour *et al.*, 2004). For example, the Office of Academic Affairs at California State University facilitated and funded development workshops on how to incorporate IL in the curriculum, which increased faculty understanding and involvement in information literacy. The Information Competency Committee, comprising librarians, faculty and administrators, was pivotal in planning and implementing IL initiatives that ended up being very successful.

Enhancing IL in Kenyan universities will include the involvement of the various players in the higher education sector and university academic administration, in particular, in developing, and implementing IL initiatives. Webber and Johnston (2006) felt that IL would succeed where it is featured in the overall universityôs learning and teaching strategy and as reflected in the academic administration policy and strategy documents. Collaboration would ensure that academic administrators are responsible for creating a learning environment for students that will encourage information literacy teaching and learning (Baro & Keboh, 2012: 314). This would include commitment to the improvement of technological infrastructure, support of training of staff involved in teaching IL, ensuring IL is in the curriculum and ensuring IL learning outcomes are assessed.

6.8 Summary

Chapter Six has discussed and interpreted the findings of this study, as presented in Chapter Five of this dissertation. Chapter Six was organized in themes and sections around data from the six research questions. Interpretations and discussions showed how the findings related to similar studies in the literature. Discussion of this study indicates that students experienced information literacy learning in diverse ways, including development of skills for finding and using information, development of analytical and critical thinking skills, enhancement of problem-solving/decision -making skills and a relational and stimulating learning process. Other IL learning experiences included learning how to use ICT to access, retrieve and manipulate information, enhancement of problem-solving skills and improvement of communication and writing skills. These experiences suggest that students enjoyed IL learning as a process that enabled them become better and more confident users of information and able to address the various problems they faced in their studies and daily lives. Although the óface-to-faceô lecture method was the most common approach in teaching IL, other teaching

approaches that are more learner-centred like the ófacilitator styleô, which incorporates much student participation, should be explored. The impact of ICT on IL as a communication tool and a tool to retrieve and access information was realized. In the changing technological environment, IL teaching will need to adapt to the changes in technology in order to remain relevant.

The perception of students, librarians and lecturers that IL was an important component of university education gives a strong entry point of advocacy for IL mainstreaming and embedding in university education curricula. The study established gains from IL learning, including empowering students to do good research and expand their knowledge base. This study also established several challenges, including shortage of qualified staff, poor ICT infrastructure and limited time allocation for IL. These challenges could be addressed by among others, training staff on IL, IL inclusion in curriculum and collaboration among lecturers, librarians and academic administrators. Successful collaboration would require all stakeholders to have a common understanding of IL and its place in university education and beyond (Ivey, 2003). Once all players understood the significance of IL and their expected roles, challenges of inadequate facilities, limited time for IL training, IL inclusion in curricula, staffing and IL training would be easier to address.

Chapter Seven presents a summary of the findings, conclusions and recommendations of this study. It discusses a contribution to theory and practice, outlines the study benefits and originality of the study and suggests areas for further research.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter presents the summary, conclusion and recommendations of the study, based on the interpretation given to the findings discussed in Chapter Six. According to the Hamilton College Writing Centre (2015), the purpose of the concluding chapter in doctoral research is to bring a researcherôs argument to a logical close, by justifying the argument to the reader. It includes a description of key points of the study and the consequences of the argument, by answering the ñso whatò question.

This chapter provides a summary of the findings and analysis in Chapters Five and Six and the conclusions and recommendations of the study. Section 7.2 provides a summary of all the chapters in the dissertation. Section 7.3 presents a summary of the findings, based on the research questions that guided the study. Section 7.4 presents the conclusions of the study, based on the findings of the study. Originality of the study is discussed in 7.5. Section 7.6 provides the contributions of the study to the body of knowledge. Recommendations of the study are given in Section 7.7. Section 7.8 presents suggestions for further research.

7.2 Summary of the Chapters

Chapter One provided the introduction and context of the study, by discussing the background to the study and the statement of the problem. The chapter disclosed the objectives and research questions of the study, as well as the rationale for the study, statement of the problem, purpose of the study and research questions. Chapter One also contains a brief statement of the methodology and methods applied, theoretical framework adopted and the delimitations/limitations for the study. The aim of this chapter was to provide the background information and context for the study and show the structure of the study.

The theoretical framework for the study was provided by Chapter Two. This chapter presented and discussed the specific theories, models and frameworks used in studying IL that informed this study. Bruceôs Seven Faces of Information Literacy formed the main model for this study (Bruce, 1997; 2003). The seven faces or conceptions are identified as: information technology,

information sources, information process, knowledge control, knowledge construction, knowledge extension and wisdom. Other information literacy models that were discussed and informed this study included the Big 6, Information Seeking Process (ISP), Sauce, Seven Pillars of Information Literacy and Focus, Links, Input and Payoff ï Intelligent Thinking (FLIP IT). The chapter provided a clear theoretical framework that guided the study.

Chapter Three detailed the literature review, which generated the theoretical foundations of information literacy, as well as empirical literature on information literacy. The purpose of this chapter was to give the study a context within the body of knowledge. The chapter sought to identify practical and theoretical gaps that the study would seek to fill. Discussions included the concept of information literacy and the various themes concerning IL, as presented in the literature, that bear on the topic of study as guided by the research questions, the problem statement and the key variables of the theoretical framework. The themes included IL perceptions, goals of IL programmes, pedagogical approaches of delivering IL, role of ICT in IL teaching and learning and challenges of delivering and learning IL. Similar studies done locally and internationally were discussed, with their findings informing the current study.

The methodology and methods used were provided in Chapter Four. This chapter provided a roadmap to the philosophical and empirical foundations of the study, as well as the strategies for population and sampling methodologies. The study adopted a pragmatist paradigm that allowed for the employment of a mixed-method approach, where quantitative and qualitative research methods were triangulated. The case study research design was utilized and involved four universities, namely: Moi University, the University of Nairobi, Daystar University and the United States International University. The multiple case study design was found appropriate, having been used in other LIS studies that described it as an important design for investigating peopleôs experiences and perceptions (Mabri, 2008:215; Mostert, 2008); and its great possibility of replication, with conclusions from the cases being considered weightier than those coming from a single case (Yin, 2013:61). Psychology students, lecturers and librarians formed the total population of 267, from which a sample of 157 was drawn. Out of the 147 student questionnaires distributed 130 (88.4%) were returned, while 15 (93.7%) of the lecturers were available for interviews. Purposive sampling for lecturers and librarians and random sampling methods for students were employed because they ensured that the desired samples

were drawn. Methods for data collection included the use of semi-structured questionnaires, in-depth interviews and a review of documents. Descriptive techniques, such as content analysis and use of SPSS for data analysis and interpretation, were discussed. Finally, Chapter Four discussed how reliability, validity and ethical issues in the study were addressed.

Chapter Five presented the findings and their analysis. It described the results as they related to the research objectives and research questions. Both narrative and graphical techniques of reporting of the findings were employed. It provided details of the basic quantitative responses from the questionnaires and the qualitative data from personal interviews, questionnaires and document analysis. The findings provided in Chapter Five formed the basis of the discussions for Chapter Six, with regard to how they related to available literature. This chapter provided the overall summary of the findings and was organized based on the research questions, as detailed in Section 7.3 below. Chapter Six also discussed how the findings related to the model that provided the theoretical framework.

Chapter Seven therefore presents a summary and review of the dissertation, in light of the literature reviewed and results presented in Chapter Five and discussed in Chapter Six. Chapter Seven discusses originality and contributions made by the study to the existing body of knowledge. It finally suggests areas for further research, based on the results, and the gaps identified in the literature that were not addressed by this study.

7.3 Summary of the Findings and Conclusions

The main findings of this study are summarized below, in accordance with the research questions, as stipulated in section 1.5 of this dissertation. The specific research questions that guided this study included:

1. What information literacy learning experiences do the fourth-year psychology students possess?
2. What are the goals of the information literacy programme at the Kenyan universities?
3. What pedagogical approaches are used to deliver information literacy to psychology students?
4. What is the role of ICT in promoting the learning of information literacy?

5. What are the perceptions of fourth-year psychology students towards information literacy?
6. What are the challenges experienced by fourth-year psychology students in learning information literacy?

7.3.1 Characteristics of the Respondents

The findings of the study revealed that the fourth-year psychology students were mainly female (63%) with 37%) being male. There were more students (56%) studying full-time and 44% were studying part-time. Similar to the students, the findings among psychology lecturers showed that the majority (66.7%) were female, with the rest (33.3%) being male. The findings revealed that there were more lecturers with doctoral level qualifications (53.7%) than Masters level (44.7%). The trend was not different among librarians, with the majority of them being female (58%) and 42% being male. The higher percentage of female involvement in psychology as a discipline has been noted in literature over the years (Pion *et al*., 1996 & Curtis *et al.,* 2003). The researcher concluded that with the academic level and experience of instructors teaching IL, Kenya was on the right path towards enhancing IL in her university education system.

7.3.2 Types of Information Literacy Learning Experiences

The present study sought to answer the research question: *What information literacy learning experiences do the fourth-year psychology students possess?* The study revealed that the students experienced IL learning in many different ways, including IL as a continuous process of acquiring skills for finding and using the information they needed. Other ways included IL learning as knowledge of the different information sources and formats, and how to access and use the information resources.

The study further revealed that psychology students experienced IL learning as acquiring analytical and critical thinking skills. These two skills are crucial for studentsô research and enhance their ability to evaluate and appropriately use the information they access. Critical thinking and analytical skills further enhance the studentsô problem-solving/decision-making skills. The analytical, critical and problem-solving skills may not necessarily be problem or discipline-specific and so have the potential to be applied to other disciplines and general areas of life, as demonstrated by several information literacy models, including FLIP IT (McCarthy,

2003), Big 6 (Eisenberg & Berkowitz, 2009), Information Seeking Process (Kuhlthau, 1985; 1991) and the Sauce Model (Bond, 2001).

The results revealed that psychology students experienced IL learning as a relational process. Studentsô interactions with librarians were found to be a key component that enhanced IL learning, with librarians being appreciated as critical sources of information. This result reveals the significance of the people aspects that need consideration while designing and administering the IL learning curricula.

A successful learning environment involves motivated learners, willing to explore and expand their knowledge base. The results of this study indicated that learners experienced IL learning as stimulating, because acquiring skills to find and use information, efficiently and effectively motivated their desire to learn more, which is a basis for developing lifelong learners (Abid, 2004). This finding suggests that studentsô motivation is related to their learning experiences. The study further revealed that IL learning was experienced as learning how to use ICT to access, retrieve and manipulate information.

Despite the challenge of inadequate facilities, the study revealed that psychology students experienced learning IL as enjoyable in smaller size classes (Table 5.14), but decried cases where IL was taught to large classes.

The results of the study revealed that psychology students experienced IL learning as personal improvement of communication and writing skills, with most of the respondents (87%) indicating that IL learning had enhanced their written communication skills (see Table 5.7).

7.3.3 Goals of the Information Literacy Programmes Offered

To address the second research question, which sought to establish the goals of IL programmes offered, interviews with librarians and lecturers and documentary sources were employed. The findings of the study revealed that the goals of IL programmes in the universities surveyed included to:

- Make students independent and lifelong learners,

- Make students aware of library resources and appreciate the value of information for doing their assignments,
- Equip library users with the required skills to explore library resources to meet their information needs,
- To empower students with skills of searching for information from different sources,
- Impart skills in students to efficiently access information relevant to their areas,
- Enable students to develop and apply various communication techniques through information analysis, interpretation and clear and critical thinking.

The above goals illustrate that the IL competency standards for higher education, as listed by ACRL (2000), are adequately covered in the IL documents analysed and some lecturers also articulated the goals very well. However, from the confessions of librarians and lecturers on studentsô IL competence at graduation, the present researcher concludes that information literacy competence and proficiency of most psychology students at graduation were inadequate and wanting, despite clear goal articulation in the documents.

7.3.4 Content of IL Instruction and How it was Taught

To address the research question that sought to establish IL content and current pedagogical approaches to teaching IL, the study revealed that information search skills, sources of information, plagiarism and use of library facilities, including the OPAC, were among the key topics covered in IL sessions (see Table 5.18). Other topics included accessing e-journals and e-books, types of libraries and services, evaluation of information sources, citation management and copyright. Information literacy instruction ranged from individual skills training to fully fledged sessions of parts of examinable courses, with most being conducted using the face-to-face lecture approach. Other teaching methods included the use of laptops and LCD projectors in seminars and groups. To ensure high standards and demonstrate the significance of IL instruction, only those librarians with postgraduate training were allowed to teach IL, while lecturers were already trained at doctoral level or were doctoral students at the time of the study.

7.3.5 The Role of ICT in Enhancing IL Learning

One way that ICT has impacted teaching and learning is by facilitating production of information resources in abundance (McClintock (1996). The literature reviewed revealed that ICT impacted IL learning by improving presentation of research work, planning and presenting

lessons and facilitating electronic communication (Brandt, 2001; Waite, 2004). This requires that users of information are equipped with skills to manipulate ICTs and be empowered with conceptual understanding of how technology operates. The study revealed that ICT was central in promoting IL teaching and learning because of its role as communication and instruction tools for students, librarians and lecturers.

The study specifically revealed that the use of the internet, and particularly video clips found online, and LCD projectors had introduced a new approach to teaching IL. As a communication tool, ICT was found to have made it possible for resident and off-campus students to access information and IL training, thereby reaching many and providing a richer teaching and learning experience (Levesque, 2003).

Although there was no evidence of online IL instruction in the universities surveyed, the need for online IL instruction was clear, as illustrated in other studies done in African universities, including Durban University of Technology in South Africa (Naidoo & Raju, 2012) and the University of Botswana (Mutula *et al*., 2006).

7.3.6 The Perceptions of Fourth-year Psychology Students towards Information Literacy

The critical research question addressed here was to establish the perceptions of fourth-year psychology students towards information literacy. The study revealed that most students, 70 (54%), considered IL as an important and therefore needed component of their university education, as it gave them confidence in accessing and using information resources. The findings further showed that students perceived IL as possessing a skill to find information, the ability to use information for various needs, including research, the ability to develop or expand a knowledge bank on a given concept and empower them to effectively communicate research findings. To give context to how IL was perceived by students, the study revealed that both faculty and librarians perceived IL as critical for university education and that they had different roles to play (Ivey, 2003). However, the study further revealed that students were ill-equipped with IL skills at the time they graduated from their programmes (Dubicki, 2013) and more was needed to be done to address the situation. The researcher concludes that the inadequate time and resources given to IL instruction are likely to be the reason why students do not possess the IL skills they ought to.

7.3.7 The challenges experienced by fourth-year psychology students in learning information literacy

Findings regarding the challenges that impeded effective IL learning indicated that:
lack of adequate learning resources and facilities such as computers and classrooms, greatly affected the studentsô IL learning, as discovered by other studies in Africa (Baro & Zuokemefa, 2011; Lwehabura & Stilwell, 2008; Hart & Davids, 2010). There was limited access to the internet, with frequent downtimes and a high cost of internet access at Moi University, because of its distance from the nearest major urban centre.

The low number of qualified staff to teach IL was a key concern. The study established that the number of librarians and lecturers teaching IL was low, especially in the public universities compared to the number of students they handled. This affected the quality of instruction, since attention to individual learners was almost absent (Baro & Zuokemefa, 2011).

Lack of IL training for lecturers and librarians resulted in poor teaching methods and incompetence in teaching IL. Since some lecturers did not even comprehend the concept of IL themselves, it can be concluded that they could not be competent to instruct students in an area whose concept they did not grasp. The study further revealed that the learning approaches used lacked motivation to learners. Better approaches could have enhanced studentsô interest in IL learning.

Large class sizes, especially in the public universities, affected the effectiveness of teaching and learning IL. This was precipitated by the limited number of trained librarians and lecturers who could teach IL.

There was limited time, and in most cases no set time, for IL on student timetables. Since IL was not a requirement and it was not integrated in the curriculum, some lecturers did not see where it came to bear on the courses they taught. Students indicated that there was not enough time to practise whatever skills they had acquired.

Unavailability of students during IL sessions was hindering effective instruction. The study revealed that librarians planned for IL sessions, but the response of students to these sessions

was very poor. This could be caused by what lecturers indicated as negative attitudes of students toward IL (see Table 5.35), or general laziness among students.

Lack of an IL policy framework at institutional or national level was another hindrance. Lack of time for IL, absence of a formal curriculum that had IL as a core requirement, inadequate facilities and lack of trained staff in IL indicate that there is no policy guidance on the place and practice of IL in Kenyan universities.

When investigating how the challenges above could be overcome, some respondents suggested that training librarians and lecturers on IL was the way forward to address the deficiency in the number of trained staff and impart IL content to some instructors. Another suggestion was enhancement of collaboration between librarians and lecturers. The establishment of a policy framework that would guide departments on IL teaching and learning was also suggested, including mainstreaming IL in the university curriculum, either as a stand-alone course or part of another course that is examinable. Other suggestions were improvement and expansion of facilities and learning resources, and active involvement of academic administrators in supporting IL activities to show institutional commitment (Lwehabura, 2007).

7.4 Overall study Conclusions

The conclusions of this study are drawn from an integration of the studyôs findings, analysis and interpretations, as assigned by the researcher and based on the research questions and objectives stated in Chapter One. The results of this study indicate that IL learning experiences of fourth-year psychology students positively relate to purposeful activities such as using ICTs, interaction among students and interactions between students and librarians. There appears to be no single experience or set of activities in a studentôs university life that affects their learning. Of critical importance is the nature and depth of a studentôs IL learning experience over a long period of time. The findings place academic librarians at the forefront in championing IL learning in their respective universities, but note that they cannot do it alone. The findings further point out that all stakeholders in a university setting must be involved to produce an information-literate graduate, because successful IL interventions are a shared

responsibility. Therefore lecturer-librarian collaboration and support from academic leadership are key for a successful IL programme.

A critical look at the ACRL IL standards for higher education (2010) and their performance indicators clearly show that IL competencies cannot be learnt in one or a few teaching sessions. They require continuous and well-planned exercises throughout their learning process in order to be acquainted with the range of available resources and to master the skill to access, retrieve and selectively use them. Through the different IL learning experiences, students can change in their understanding of finding and using information.

7.5 Contributions and Originality of the Study

The study was conducted to investigate the information literacy learning experiences of fourth-year psychology students in Kenyan universities. Creswell (2002:4) discusses four ways that make research important in addressing problems or issues and searching for potential solutions:

> bridging the gaps in knowledge, by investigating an area of research that fills a void in existing information, expanding knowledge, by extending research to new ideas or practices, replicating knowledge, by testing old results with new participants or at new sites and adding the voices of individuals, whose perspectives have not been heard, to the knowledge.

Creswell (1994) observed that a research studiesô contribution to the body of knowledge is governed by the extent to which the scholarly output: adds to existing scholarly research in the field of study; informs policy; informs practice; and can drive policy improvements in the field. The findings from this study contribute towards creating awareness with regard to the theory, policy and practical implications of learning IL in Kenyan universities.

7.5.1 Originality of the Study

Learning experiences are an integral part of any educational process (McCluskey, 2009) in the sense that such experiences can help in the design of curriculum and pedagogy. However, LIS literature has paucity studies addressing studentsô IL learning experiences. In this regard, no study was found to have been done generally in Africa or specifically in Kenya focusing on IL learning experiences of students. This study is therefore the first to give a student voice to IL learning literature, in a Kenyan context.

Additionally, a few studies done on IL in Kenya were either inter-disciplinary or generic in nature, focusing on librarians or librarianship, IL content. There was no study that focused on a single disciplinary perspective. This study explored IL learning experiences of students taking Psychology as a teaching discipline in Kenyan universities.

7.5.2 Contributions of the Research to Theory

This study makes a contribution to attempting to bridge noted gaps in the literature reviewed and contributing to the information literacy body of knowledge from the perspective of students in the African context. In spite of the volume of studies in IL literature, the present study is context-specific, with questions that are directed at the Kenyan IL interventions in universities. To this extent, this study is ground-breaking in trying to understand the studentsô experiences of IL learning in Kenya. The research details an empirical exploration of IL as a concept in the context of four Kenyan universities, focusing on psychology as a discipline.

This study further contributes to the body of knowledge on IL by focusing on an aspect that is not widely researched on. Attention in most IL studies seems to be concentrated on instructors, methods of instruction, content, infrastructure and assessment of IL programmes and initiatives. This study brings in a different understanding of the IL research, by examining the learning experiences of students. In addition to exploring studentsô IL learning experiences, this study surveyed lecturers and librariansô experiences in teaching IL. More significant is the focus in many IL studies that is on students in their first years in universities (Kavulya, 2003; Maybee, 2005; Akakandelwa, 2010; Chipetta, Jacobs and Mostert, 2008; Fidzani, 2010). Although this could be because of the understanding that IL instruction given at university entry level is more beneficial, it has led to limited empirical studies on those exiting universities. The present study therefore makes a contribution in attempting to bridge these gaps. By providing this information, the study contributes to knowledge by providing the student voice on information literacy learning.

In addition to reporting on studentsô experiences which is minimally covered in LIS literature, this study focused on psychology students and the results therefore contribute towards understanding IL learning from a discipline-specific perspective. A search in PsycINFO,

Emerald Insight, Psych Articles, Psychology Journals, and Library and Information Science Abstracts (LISA), which are leading psychology databases, revealed limited attempts to investigate IL learning experiences in psychology as a discipline. The findings of this study therefore provide empirical baseline data that can be used to compare with other IL studies done, or to be done, in different disciplines to establish whether they corroborate or differ.

By articulating the perspective of learners and instructors, this study gives a starting point for researchers who intend to employ a mixed method approach to investigate the student experience of learning. This study has demonstrated how the mixed method approach sufficiently covered investigating studentsô learning experiences. Another area that may require further examination is the studentsô personal disposition towards learning information, or the impact of learning IL, to establish how learners experience IL in other learning contexts.

This studyôs findings also make an important contribution to the body of knowledge by stating that successful IL initiatives are a result of a collaborative approach. The study has demonstrated that academic and senior university administrators are among key IL stakeholders whose involvement in IL initiatives from design to implementation is critical. In addition, involvement of lecturers, working closely with librarians is stated to form a formidable team that would lead to successful IL implementation.

Some studies have defined and approached IL as a set of skills needed by students. This studyôs findings emphasize the fact that IL must stop being looked at as a set of skills by
For students, and instead to be viewed as being a continuous process that is user-centred, seeking to understand and address the needs of information seekers and users - students, academic administrators, lecturers and librarians, among others.

7.5.3 Contributions of the Research to Policy

The findings of this study can contribute to policy in various ways, and at various levels:

The study provides information that will help in expanding knowledge on the topic of information literacy, by providing the student voice on information literacy learning. The new knowledge will be useful to lecturers, librarians and university administrators in their quest to

improve the IL learning experiences of students. The results will give the needed data and information that is critical in the development of specific guiding policies for discipline-specific and general initiatives regarding curriculum design and IL education.

At the national level, results of this study prepare the ground for the formulation of a robust national IL policy framework. The haphazard IL initiatives in the country are a result of the absence of a guiding policy document at the national level. This study lays bare the challenges that lack of such a policy pose. This study has shown the centrality of ICT in IL teaching and learning which the nationally policy would base on to ensure ICT has its rightful place in IL learning in the country. The national policy would provide impetus to development of institutional IL policies that would guide discipline-specific IL curriculum designs and implementation. This could build on the guidelines provided by the CUE for IL in universities and expand them to cover other levels of education. Like the Kenya ICT policy (Ministry of Information, Communications, and Technology, 2011) the IL policy framework will guide the design, implementation and assessment of IL initiatives at all levels of teaching in the country and form a key reference tool. For example, mainstreaming IL into the university curriculum would ensure the place of IL is felt and guarded. Such a policy will be instrumental in creating awareness to the populace of the significance and place of IL in education and the society at large.

There is need to formulate formal IL standards and expected outcomes in Kenya that are specific to addressing IL in the Kenyan context. Kenya Library and Information Services Consortium (KLISC) could take the lead in the development of such standards. These will drive the development of IL in learning institutions throughout the country, by providing guidelines and a regulatory framework that will see effectiveness in IL instruction.

Another contribution to policy is the development of the concept of an information culture. Kenyans do not have an information culture based on academic discourse. The current and past educational systems have not been able to inculcate in students the desire for education for knowledge, but rather desire for information that will help them pass examinations. There is little passion to search for information for knowledge. What exists can be called a functional reading culture, where ability to read and write suffices, yet IL aims to create an information

culture that results in lifelong learners, able to exploit information for the benefit of society. Results of this study provide empirical data and information that policy-makers at the national level could reflect on, in formulating a national information literacy policy by articulating the need and benefits of IL in all sectors of the economy.

7.5.4 Contributions of the Research to Practice

The results of this research suggest that there is a possible need to examine the nature of IL instructional design and how it is applied by lecturers and librarians teaching information literacy. Results of the study illustrate that students lack adequate training in IL, which calls on IL curriculum designers to develop a more learner-centred curriculum. Librarians need to re-evaluate their IL initiatives and general practices to adopt those that make them visible and available to students, since students desired more interactions with librarians. The need for increased student-librarian interaction can be met partly through regular library forums and redesign of the ñlibrary spaceò, to make it as flexible and student friendly as possible.

For academic administrators, the results of this study clearly present empirical data and information that could be likely to form a firm basis for collaboration of all stakeholders and partnering that will ensure that IL is addressed at institutional policy formulation level. Librarians must be willing to work very closely with lecturers and administrators of their institutions, to ensure IL takes its place in university education. Academic administrators will need to be deliberate in facilitating the institutionalization of IL by targeting its adoption at individual, departmental and finally institutional levels.

This study has implications for the design of IL learning interventions. The usersô perspective that the study presents is a key factor for pedagogy refining, in order to help student IL learners, librarians and psychology faculty design content for IL instruction for students in psychology that meets their needs. Initiatives for IL in Kenyan universities have, in the recent past, been intensified, with the requirement by the Commission for University Education to have all university libraries running IL programmes. However, such initiatives have not been based on any empirical research to understand how students experience IL learning. No wonder many students perceived IL as seeking information needed for writing papers. If IL is to be understood in totality, including evaluation and ethical use of information sources, lecturers and

librarians must deliberately include this in their teaching curriculum of IL and ensure all aspects of IL are covered. The findings of this study therefore make a major contribution to literature that could facilitate effective and relevant development of IL programmes in future.

7.6 Recommendations

Reflecting on the results of this study, as espoused in the conclusions, theory and extant literature reviewed, the researcher makes recommendations on the following areas: IL awareness, pedagogical approaches to delivering information literacy, IL training for instructors, the role of ICT in promoting IL teaching and learning, collaboration and IL policy framework. The recommendations are organized as per the studyôs research questions.

7.6.1 Recommendation One: IL Perception by students

This study also sought to investigate fourth-year psychology studentsô perceptions of IL. The findings revealed that although most students, 70 (54%) were aware of what IL was and spoke highly of the significance of IL, this percentage is not adequate. Furthermore, some lecturers and students did not know what information literacy was all about. For example, some lecturers confused IL with ICT, while others (4 or 26.7%) indicated that IL was about students being aware of what is happening. For effective IL teaching and learning, students and lecturers will need to properly understand the IL concept. The researcher recommends that deliberate marketing and advocacy for IL be done, spearheaded by librarians, to regularly popularise IL and its significance to all members of the university. Such awareness activities should be carried on regularly, and at specific times of the year. Such advocacy would bring key academic administrators on board by making them understand the place of IL in university education. The support of administrators is critical to successful IL initiatives.

7.6.2 Recommendation Two: Pedagogical Approaches to Delivering Information Literacy

One of the critical research questions of this study aimed to establish the pedagogical approaches to teaching IL. Common approaches in all the four universities studied included library orientation, library instruction sessions and a section in a first-year compulsory course. While the content of IL programmes (see section 5.4.5.1) was found to adequately cover the key areas of the psychology information literacy standards (ACRL, 2010), respondents reported poor teaching methods by instructors. This was confirmed by lecturers and librarians, when they indicated that they lacked training in IL (see table 5.35). This could also be the reason why they also observed that students did not have the expected IL competency skills

by the time of graduation. The researcher recommends short-term IL training workshops for all instructors involved in IL instruction to be conducted periodically. The need for such training is supported by the responses of some of the lecturers, who indicated that they did not know exactly what information literacy was all about. Furthermore, IL needs to be included and emphasized in the curriculum for training librarians to establish their content knowledge. The revealed deficiency in IL instruction methods could be addressed by including best practices in IL teaching as part of the curriculum in the short-term IL training mentioned earlier. In addition, librarians require general teaching skills in order to understand how to communicate IL content to the different types of students. Librarians will need to be creative in the manner they design and implement IL initiatives and take into consideration the needs of students which vary from time to time.

7.6.3 Recommendation Three: The role of ICT in promoting IL teaching and learning

It is not possible to talk about IL and fail to mention ICTs. This study sought to establish the role ICT played in enhancing IL teaching and learning. The study established that ICT played a key role in IL teaching and learning, as demonstrated by the instructors who indicated that they used laptops, projectors, internet, CDs and DVDs and videos to teach. ICT was responsible for the massive production of information and was also used as a communication tool. The findings of this study (see Table 5.35) and the literature reviewed (Lwehabura & Stilwell, 2008; Hart & Davids, 2010) reveal that lack of needed facilities impeded IL learning. Since many students indicated that they did not have access to computers, the researcher recommends that each university prioritizes upgrading of their ICT infrastructure to ensure that adequate numbers of computers for students are available.

With the increasing number of off-campus and part-time students in Kenyan universities, the literature reviewed shows that ICT could be utilized to ensure online IL training is done to take care of the off-campus students, but also to avail training to all students at their own convenience. With websites for all the four universities surveyed showing few online IL initiatives, the researcher recommends that individual universities pursue online IL services in order to reach out to many students. These should include, but not limited to interactive websites that include IL self-assessment exercises and games. As Mutula *et al.* (2006) found, online IL training provided an effective way to impart IL competencies, provided adequate

computer facilities were in place, including high speed internet access.

7.6.4 Recommendation Four: Collaboration

Student respondents indicated that one of the challenges that impeded effective IL learning was lack of collaboration between librarians and lecturers. The present study found that IL would be successful if librarians, academic administrators and lecturers worked as a team in developing and implementing information literacy interventions (Baro & Keboh, 2012: 314). Since no one party can effectively train students in IL without another party, the researcher recommends that a senior librarian and senior lecturer be charged with co-ordinating collaboration activities, starting with curriculum design, through to its delivery. Academic administrators would be critical in ensuring that collaborative aspects are included in the development and implementation of student IL learning programmes, by giving the needed support. These collaborations will help in the establishment of IL as an institutional level concern and not merely a library issue.

7.6.5 Recommendation Five: Information Literacy Policy Framework

This study sought to investigate the challenges that impeded IL teaching and learning. Recommendations in this section seek to address some of the challenges that the study established. The findings of this study revealed that IL initiatives were not well co-ordinated, lacked administratorsô support and suffered from low student attendance, inadequate funding and staffing, thereby impeding IL advancement. The documentary review established that none of the universities had an IL policy to give guidance and direction. The researcher recommends that libraries develop clear IL statements to be included in the library mission statements, to act as a guide to IL activities, stating its advantages. This will act as enlightenment to the university academic administration and the librarians will need to further advocate for a policy statement, at university level, on IL. When this is achieved, all education stakeholders will be able to recognize and appreciate IL. This is likely to be a bargaining tool for resources and personnel needed to support IL activities, which have been major impediments to IL in African universities (Kavulya, 2003; Baro & Keboh, 2012). This will be a main step towards mainstreaming IL in the university curriculum which, in turn, will address the lack of interest by students and lack of adequate time for it, since it will now appear on the timetable.

Further to the establishment of an IL policy framework, the researcher recommends that IL training be made a mandatory requirement for all students, starting in the first year and embedded in subject or discipline-specific courses offered during the entire training until graduation. An IL credit or zero credit course could be designed and made a requirement foa all students. This recommendation results from the findings, where librarians indicated that lack of enough time allocated to IL was an impediment to learning it (see Table 5.34). Students had also indicated that there was not enough time to practise whatever skills they acquired. A policy framework would ensure adequate time and required technological infrastructures are allocated for IL initiatives.

A university IL policy statement will need to clearly specify the need and responsible positions for collaborating IL initiatives in the university. The researcher recommends that awareness of the significance of IL and the university administrationôs position on IL be made part of library staff and lecturersô orientation. For continuing librarians and lecturers, a refresher course can be mounted, supervised by the university academic administrators.

7.7 Suggestions for Further Research

This study investigated the information literacy learning experiences of fourth-year psychology students at Kenyan universities. A number of issues and gaps were identified that present an opportunity for scholars in the field to further investigate. Nonetheless, some limitations of the study also provide possible areas for further research. These possible research areas are highlighted in the discussion below.

This study concentrated on fourth-year psychology students. A similar study in another discipline could be done to compare the student experiences in other disciplines with those by psychology students. Further research could reveal whether or not IL learning experiences are similar and therefore generic, or whether they are different, raising the need to establish the reasons for similarity or differences in the experiences of students.

The current study focused on student learning experiences. Further research could be done to establish the impact of learning IL on studentsô academic performance. Such a summative study could reveal the direct contributions that IL makes on the students, by analysing the performance of the students before and after learning IL.

The findings of this study indicated that lecturers supported IL and referred to it as critical for university education, but practically did not seem involved in its full implementation. Further study could be done on lecturers, to investigate their perception of IL and how their perception influenced their involvement in IL teaching and learning in universities.

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APPENDIX I: LETTER OF INTRODUCTION TO DAYSTAR UNIVERSITY

UNIVERSITY OF
KWAZULU-NATAL
INYUVESI
YAKWAZULU-NATALI

Deputy Vice Chancellor,
Academic Affairs
DAYSTAR UNIVERSITY
P. O. Box 44400-00100
Nairobi, Kenya

30 May 2012

RE: Introducing Mr Ephraim Mudave– PhD Student at University of KwaZulu-Natal

This letter serves to introduce and confirm that Mr Ephraim Mudave is a duly registered PhD (Information Studies) candidate at the University of KwaZulu-Natal. The title of his PhD research is '*Information Literacy Learning Experiences of Fourth Year Psychology Students at Kenyan Universities*'. The outcome of this study is expected to inform the development of university policies for the design, revision and implementation of IL programmes. Additionally, the results may help guide the formulation of a national information literacy policy for Kenya.

As part of the requirements for the award of a PhD degree Mr Mudave is expected to undertake original research in an environment and at a place of his choice. The UKZN ethical compliance regulations require him to provide proof that the relevant authority where the research is to be undertaken has given approval.

We appreciate your support and understanding to grant Mr Mudave permission to carry out research in the areas he has identified. Should you need any further clarification, do not hesitate to contact me.

Thank you in advance for your understanding

Prof Stephen Mutula (Information Studies Programme)

Supervisor of Mr Mudave and Academic Leader, Development Cluster

University of KwaZulu Natal
Private Bag X01 Scottsville 3209
Pietermaritzburg
Email: mutulas@ukzn.ac.za
Tel: +27 33 260 5571; +27 712 750 109

APPENDIX II: LETTER OF INTRODUCTION TO MOI UNIVERSITY

UNIVERSITY OF
KWAZULU-NATAL
INYUVESI
YAKWAZULU-NATALI

Deputy Vice Chancellor,
(Research and Extension)
Moi University,
P.O.Box, 3900-30100
Eldoret, Kenya
30 May 2012

RE: Introducing Mr Ephraim Mudave– PhD Student at University of KwaZulu-Natal

This letter serves to introduce and confirm that Mr Ephraim Mudave is a duly registered PhD (Information Studies) candidate at the University of KwaZulu-Natal. The title of his PhD research is '*Information Literacy Learning Experiences of Fourth Year Psychology Students at Kenyan Universities*'. The outcome of this study is expected to inform the development of university policies for the design, revision and implementation of IL programmes. Additionally, the results may help guide the formulation of a national information literacy policy for Kenya.

As part of the requirements for the award of a PhD degree Mr Mudave is expected to undertake original research in an environment and at a place of his choice. The UKZN ethical compliance regulations require him to provide proof that the relevant authority where the research is to be undertaken has given approval.

We appreciate your support and understanding to grant Mr Mudave permission to carry out research in the areas he has identified. Should you need any further clarification, do not hesitate to contact me.

Thank you in advance for your understanding

Prof Stephen Mutula (Information Studies Programme)

Supervisor of Mr Mudave and Academic Leader, Development Cluster

University of KwaZulu Natal
Private Bag X01 Scottsville 3209
Pietermaritzburg
Email: mutulas@ukzn.ac.za
Tel: +27 33 260 5571; +27 712 750 109

APPENDIX III: LETTER OF INTRODUCTION TO THE UNIVERSITY OF NAIROBI

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

DVC (Academic)
University of Nairobi
P.O. Box 30197 00100
GPO, NAIROBI

30 May 2012

RE: Introducing Mr Ephraim Mudave– PhD Student at University of KwaZulu-Natal

This letter serves to introduce and confirm that Mr Ephraim Mudave is a duly registered PhD (Information Studies) candidate at the University of KwaZulu-Natal. The title of his PhD research is '*Information Literacy Learning Experiences of Fourth Year Psychology Students at Kenyan Universities*'. The outcome of this study is expected to inform the development of university policies for the design, revision and implementation of IL programmes. Additionally, the results may help guide the formulation of a national information literacy policy for Kenya.

As part of the requirements for the award of a PhD degree Mr Mudave is expected to undertake original research in an environment and at a place of his choice. The UKZN ethical compliance regulations require him to provide proof that the relevant authority where the research is to be undertaken has given approval.

We appreciate your support and understanding to grant Mr Mudave permission to carry out research in the areas he has identified. Should you need any further clarification, do not hesitate to contact me.

Thank you in advance for your understanding

Prof Stephen Mutula (Information Studies Programme)

Supervisor of Mr Mudave and Academic Leader, Development Cluster

University of KwaZulu Natal
Private Bag X01 Scottsville 3209
Pietermaritzburg
Email: mutulas@ukzn.ac.za
Tel: +27 33 260 5571; +27 712 750 109

APPENDIX IV: RESEARCH AUTHORIZATION FROM NACOSTI

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349
254-020-310571, 2213123, 2219420
Fax: 254-020-318245, 318249
When replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/RCD/13/012/50**

Date: **9th August 2012**

Ephraim Mudave Kanguha
University of Kwazulu Natal
Private Bag X01, Pietermaritzburg
Scottsville.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Information literacy learning experiences of fourth year psychology students in Kenyan Universities,"*** I am pleased to inform you that you have been authorized to undertake research in **Selected Universities** for a period ending **31st December, *2014.***

You are advised to report to **the Vice Chancellors of Selected Public/Private Universities** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:

The Vice Chancellors
Selected Public/Private Universities.

APPENDIX V: APPROVAL LETTER FROM THE UNVIERSITY OF NAIROBI

UNIVERSITY OF NAIROBI
OFFICE OF THE DEPUTY VICE - CHANCELLOR
(Research, Production & Extension)
Prof. Lucy W. Irungu B.Sc., M.Sc., Ph.D.

P.O. Box 30197-GPO.
00100,Nairobi-Kenya
Telephone: +254-20-2315416 (DI), 318262

Fax:0202317251
Email:dvcrpe@uonbi.ac.ke

UON/RPE/1/12 **June 29, 2012**

Ephraim Mudave Kanguha
University Librarian
African International University
Karen, Nairobi

Dear Kanguha,

APPROVAL TO CARRY OUT RESEARCH AT THE UNIVERSITY OF NAIROBI

I write to inform you that your request dated June 19, 2012, to carry out research at the University of Nairobi towards your Ph.D degree programme at the University of Kwa Zulu titled: ***"Information Literacy Learning Experiences of Fourth Year Psychology Students in Kenyan Universities"*** has been approved.

You are however required to deposit a copy of your research findings with the Vice-Chancellor, UoN on completion of your research.

LUCY W. IRUNGU
DEPUTY VICE-CHANCELLOR
(RESEARCH, PRODUCTION AND EXTENSTION)
&
PROFESSOR OF ENTOMOLOGY

c.c. Vice-Chancellor
DVC, (AA)
DVC, (A&F)
DVC, (SA)

ISO 9001:2008 CERTIFIED

The Fountain of Knowledge Providing leadership in academics excellence

APPENDIX VI: APPROVAL FROM DAYSTAR UNIVERSITY

DAYSTAR UNIVERSITY

28th August 2012

Mr. Ephraim Mudave Kanguha
C/o University of Kwazulu Natal
Private Bag X01, Pietermaritzburg
Scottsville.

Dear Mr. Mudave,

Re: Information literacy learning experiences of fourth year psychology students in Kenyan universities.

I'm in receipt of your letter dated 9th August 2012 requesting for authorization to carry out research on the above mentioned topic in Daystar University. I note that the research period is expected to last up to 31st December 2013.

This is to certify that you have been allowed to carry out the research at Daystar University as stipulated in your letter of request on condition that:

i. You are willing to share the results of your study findings.
ii. The ethical standards of research are maintained and that the process is done with minimal interruption to the university programs.

Thank you and wish you every success.

28.08.2012

Dr. Alice Munene
Ag. Deputy Vice-Chancellor Academic Affairs

CC: VC
DVC F & A
DVC IA

P.O. Box 44400 Tel: (020) 2723002/3/4 Fax: (020) 2728338, Nairobi or P.O. Box 436, Tel: (045) 22601/2/3 Fax: (045) 22420 Athi River
E-mail: daystar@maf.or.ke Website: www.daystaruniversity.net

APPENDIX VII: APPROVAL FROM MOI UNIVERSITY

MOI UNIVERSITY

OFFICE OF THE DEPUTY VICE CHANCELLOR
RESEARCH AND EXTENSION

Tel: (053) 43355
(053) 43620
Fax: (053) 43355
Email: dvcre@mu.ac.ke

P.O. Box 3900
Eldoret - 30100
Kenya

Ref No. MU/DVC/REP/27B

Date: 3rd September, 2012

TO WHOM IT MAY CONCERN

RE: AUTHORITY TO CARRY OUT RESEARCH – MR. EPHRAIM MUDAVE KANGUHA

Mr. Ephraim Mudave Kanguha is a Ph. D. student at University of KwaZulu-Natal in the Information Studies programme. He has applied for authority to conduct research at Moi University, Uasin Gishu County.

The purpose of this letter is to request you to accord him all the support as he conducts his study on: *"Information Literacy Learning Experiences of Fourth Year Psychology Students in Kenyan Universities"*. By copy of this letter, authority is hereby granted to him to carry out the said research.

After the completion of the research, a complete report in both hard and soft copy shall be submitted to the office of Deputy Vice-Chancellor, Research & Extension.

Any assistance accorded to her will be highly appreciated.

Yours faithfully,

PROF. B. E. L. WISHITEMI
DEPUTY VICE-CHANCELLOR
RESEARCH & EXTENSION

/ss

Cc: *Mr. Ephraim Mudave Kanguha*

APPENDIX VIII: APPROVAL FROM THE UNITED STATES INTERNATIONAL UNIVERSITY

UNITED STATES INTERNATIONAL UNIVERSITY

31st August, 2012

Ephraim Mudave,
University Librarian, Africa International University (Formerly NEGST)
P.O.Box, 24686 - 00502 Karen, Nairobi - KENYA
Office: +254 (0)20-2603664, Fax: +254-(0)20-882906
Mobile: +254 722 677 633 / +254 770 225 599
Email: Ephraim.mudave@AfricaInternational.edu; emudave2@yahoo.com

Dear Mr. Mudave,

RE: PERMISSION TO CONDUCT RESEARCH AT USIU

You are hereby granted permission to conduct research at United States International University on the topic, **"Information Literacy"** Your research period is expected to last Fall 2012 Semester.

Please contact Professor Francis Wambalaba, the Associate DVC AA, Research at fwambalaba@usiu.ac.ke or +254-20-3606441/442 for terms and conditions.

Thank you.

Yours sincerely,

UNITED STATES INTERNATIONAL UNIVERSITY
USIU
31 AUG 2012
ACADEMIC AFFAIRS

Mathew O. Buyu, PhD
DEPUTY VICE CHANCELLOR,
ACADEMIC AFFAIRS

CC: Prof. Francis Wambalaba, Associate DVC AA, Research

APPENDIX IX: INFORMED CONSENT

Dear Participant,

My name isé Ephraim Mudave Kanguha. I am a PhD (Information Studies) candidate studying at the University of KwaZulu-Natal, Pietermaritzburg Campus. The title of the research is: *Information literacy learning experiences of fourth-year psychology students in Kenyan universities*. The aim of the study is to investigate the information literacy learning experiences of fourth year Psychology students in Kenyan universities. I am interested in interviewing you so as to share your experiences and observations on the subject matter.

Please note that:

- The information that you provide will be used for scholarly research only.
- Your participation is entirely voluntary. You have a choice to participate, not to participate or stop participating in the research. You will not be penalized for taking such an action.
- Your views in this interview will be presented anonymously. Neither your name nor identity will be disclosed in any form in the study.
- The interview will take about thirty-forty minutes.
- The record as well as other items associated with the interview will be held in a password-protected file accessible only to myself and my supervisors. After a period of 5 years, in line with the rules of the university, it will be disposed by shredding and burning.
- If you agree to participate please sign the declaration attached to this statement (a separate sheet will be provided for signatures)

I can be contacted at: School of Social Sciences, University of KwaZulu-Natal, Pietermaritzburg Campus, Scottsville, Pietermaritzburg. Email: 21155434@ukzn.ac.za; emudave2@yahoo.com mailto:213571311@stu.ukzn.ac.zaCell: +254722677633.

My supervisor is *Prof. Stephen Mutula* who is located at the School of Social Sciences, Pietermaritzburg Campus of the University of KwaZulu-Natal. Contact details: email mutulas@ukzn.ac.za. Phone number: +27712750109. My co-supervisor is Dr. Ruth Hoskins who is located at the School of Social Sciences, Pietermaritzburg Campus of the University of KwaZulu-Natal. Contact details: email HoskinsR@ukzn.ac.za. Phone number: 033 260 5093

The College of Humanities Research Ethics Officer is Phumelele Ximba who is located at Humanities Research Ethics Office, University of KwaZulu-Natal. Contact details: email:emudave2@yahoo.com Phone number +254722677633.

Thank you for your contribution to this research.

DECLARATION

Ié (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire. I understand the intention of the research. I hereby agree to participate.

SIGNATURE OF PARTICIPANT DATE

.é é

APPENDIX X: QUESTIONNAIRE FOR STUDENTS

My name is Ephraim Mudave Kanguha, a PhD (Information Studies) student at the University of KwaZulu-Natal, South Africa. I am undertaking a study to investigate the information literacy learning experiences of psychology students in Kenyan universities. I thank you for agreeing to participate in this study. I would like to assure you that your responses will be treated with **utmost confidentiality** and used solely for the purpose of this study.

Thank you for your time and contribution to this research project.

1. Demographics

a. Gender: [ ] Male [ ] Female **b. Study mode: [ ]** Regular [ ] Part-time/ evening

c. Year of study [ ]1st [ ]2nd [ ]3rd [ ]4th **d. Institution**é .é é é é é é é é é é é é ..

e. Course é ..

2. What do you understand by the term "information literacy"?....................................

é é

é é é é é é .é é

é é é é é é é .é é

é é

Please ***CIRCLE*** *the number beside each statement that* ***most accurately*** *reflects the extent to which you agree or disagree with it. 1 means you* ***strongly DISAGREE*** *and 5 means you* ***Strongly AGREE*** *with the statement.*

3. Library Experiences

	Type of library experience	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	I use the library resources for my term papers and general information needs	1	2	3	4	5
2	I know how to get specific titles easily using online library catalogues	1	2	3	4	5
3	I can find and use various library resources like books, journals, videos	1	2	3	4	5
4	Our library resources are appropriate for my information needs	1	2	3	4	5
5	There is need for more student-librarian interaction	1	2	3	4	5

4. Teaching and content of the information literacy programme

	Type of experience	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	It was clear to me what I was supposed to learn in the information literacy course	1	2	3	4	5
2	The topics seemed to follow each other in a way that made sense to me	1	2	3	4	5
3	I found my studies intellectually stimulating	1	2	3	4	5
4	The handouts and other materials we were given helped me to understand the unit	1	2	3	4	5
5	I could see how the set work fitted in with what we were supposed to learn	1	2	3	4	5
6	Assessments of the information literacy course/sessions helped me learn better	1	2	3	4	5
7	Plenty of examples and illustrations given helped us to grasp things better	1	2	3	4	5

5. Computer and IT Experiences

	Type of experience	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	I use a computer to prepare reports and term papers	1	2	3	4	5
2	I use email or other online communication programs effectively	1	2	3	4	5
3	I search the internet for course related materials	1	2	3	4	5
4	I use electronic databases with ease to get needed information	1	2	3	4	5
5	I understand how to evaluate free information on the internet for validity	1	2	3	4	5
6	Computers have helped a great deal in learning information literacy	1	2	3	4	5
7	Online learning experiences were well integrated in the face to face sessions	1	2	3	4	5
8	Electronic sources are my first priority when looking for information	1	2	3	4	5

6. Learning Environment for information literacy programme

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Facilities (classrooms, computer labs, etc) are adequate for IL learning	1	2	3	4	5
2	Close student-student interaction enhanced my IL learning	1	2	3	4	5

3	Class size was good for programme	1	2	3	4	5
4	I am satisfied with overall learning environment	1	2	3	4	5

7. How much do you feel you gained from studying information literacy?

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	As an individual, I am able to define my information needs	1	2	3	4	5
2	I can integrate new information into an existing body of knowledge	1	2	3	4	5
3	I can use information for critical thinking and problem-solving	1	2	3	4	5
4	I can organize and be responsible for my own learning	1	2	3	4	5
5	I can communicate knowledge and ideas effectively	1	2	3	4	5
6	I feel confident about tackling unfamiliar problems	1	2	3	4	5
7	I can track down and use information in different formats	1	2	3	4	5
8	I have Information Technology/ Computer skills	1	2	3	4	5
9	IL has stimulated my enthusiasm for further learning	1	2	3	4	5
10	I have good written communication skills	1	2	3	4	5

8.What other gains have you got from information literacy learning?é é é é é é é é é .
é é
...é é
é ..é é
é é
é é
é .. 9. Apart from the general sessions by the library taught to all students, have you received any specific information literacy training as a psychology student? Yes/NOé é é é é é . If yes, describe the trainingé é é é é é é é é é é é é é é é .é ..é é é é é é é
é é
é é
é é é é é é ...é é
é é
é ...

10. What challenges have you faced over the years of learning information literacy?

é é
é é
é é
é é
é é
é é

11. How do you think information literacy programme can be improved to make learning it better? é .
é é é é é é ..é é
é é
é é
é é
é é
é é

12. Do you think learning information literacy at the university is important? YES NO

Briefly explain your answer...
é é
é é
é ....

13. Are there any changed ideas about information that you link directly to your information literacy learning? é .
é é
é é
é é
é é

<u>Researcher</u>
Ephraim Mudave Kanguha
PhD Student,
Information Studies Programme. .
University of Kwa-Zulu Natal
Republic of South Africa
+254 722677633, 254-020-3882104
emudave2@yahoo.com

APPENDIX XI: INTERVIEW SCHEDULE FOR LIBRARIANS

My name is Ephraim Mudave Kanguha, a PhD (Information Studies) student at the University of KwaZulu-Natal, South Africa. I am doing a study to investigate the information literacy learning experiences of psychology students in Kenyan universities. I thank you for agreeing to participate in this study. I would like to assure you that your responses will be treated with **utmost confidentiality** and used solely for the purpose of this study.

1. Biographical information
   a) Gender: [ ] Male [ ] Female
   b) Academic qualifications: [ ] PhD [ ] Masters [ ] Bachelors
   c) Work experience:[ ]0-5yrs [ ]5-10yrs [ ]10-15yrs [ ]15-20yrss [ ]over 20yrs
   d) Institution é
2. What is your understanding of the concept of ***information literacy***? é é é é é é .
é é
é é
é ..
3. What type of user education / reader education / information literacy programme does your library offer to undergraduate psychology students? ....
é ..é é é é é é é é é é
é é
é é
é ....
4. What are the key objectives for conducting these training sessions/programmes?
....
é é
é é
é é
5. What areas/topics are covered during these sessions?...
....
....
....
6. Who conducts the information literacy training programmes?....................................
é é

7. How is the above named course/session/programme conducted? é é é é é é é ..
   é
   é
   é
   é
8. What assessment techniques do you use for the students?.....
   é
   é
   é
9. What challenges do you face that in your view impede effective IL learning?.....
   é
   .é é
   é .é é
   é
   é
10. How do you think the challenges in9 could be addressed? é é é é é é é é é ..
   é
   é
   é
   é
   é
   é
11. Do you offer any IL related programme to final year psychology students as they
   prepare to do their projects? Yes/No (If yes, name the programme)é é ...
   é
   What are the objectives of the programme?é é é é é é é é é é é é é é é ..
   é
   é
   é
   é
12. What do you think could be done to enhance IL in your university?.....
   é
   é

How do you think Information Communication Technologies (ICT) have impacted on IL and learning in universities?..
é é
é é
é é
é é

13. What is the evidence of the impact of IL on fourth-year psychology students? (Observable, testable, etc)é .
é é
é é
é é
14. Are you satisfied with the IL skill level of graduates from this university? Yes/No. Briefly explain your answer...
é é
é é
é é
é é
15. What is your general perception of IL as a programme in university education?
é é
é é
é é
é é
é é

Again, thank you for your time, and offering information for this study.

APPENDIX XII: INTERVIEW SCHEDULE FOR LECTURERS

My name is Ephraim Mudave Kanguha, a PhD (Information Studies) student at the University of KwaZulu-Natal, South Africa. I am undertaking a study to investigate the information literacy learning experiences of psychology students in Kenyan universities. I thank you for agreeing to participate in this study. I would like to assure you that your responses will be treated with **utmost confidentiality** and used solely for the purpose of this study.

1. Biographical information
   a) Institution é ..
   b) Level of teaching year: [ ] 1st yr. [ ] 2nd yr. [ ]3rd yr. [ ]4th yr.
   c) Gender: [ ] Male [ ] Female
   d) Academic qualifications: [ ] PhD [ ] Masters [ ] Bachelors
   e) Official title: é é é é é é é é é é é .....
   f) Work experience:[ ]0-5yrs [ ]5-10yrs [ ]10-15yrs [ ]15-20yrss [ ] over 20yrs
2. What is your understanding of the concept of ***information literacy***? é é é é é ..
   é .é é é é é é
   é .é .é é é é é
   é
3. Among the courses you teach, is there any that is related to information literacy programme directly or indirectly? Yes/Noé .
   If yes what is the name of the course (s)?é é é é é é é é é é é é .....
   é
   If no, move to Question 11

4. When is the IL programme offered? é é é é é é é é é é é é é é é é é .
5. Is it a full credit programme or part of another course? é é é é é é é é é
   If part of another course, what is the name of the other course?.....
   é
   é é é .é ..
6. How do you conduct the IL programme? é é é é é é é é é é é é é é é ..
   é
   .é é
   é ...

7. What are the main topics you cover for this programme? é é é é é é é é é é é
é é
é ...
8. What assessment techniques do you use for the students? ....
é é
é é
9. To what extent do you integrate Information Communication Technologies in your teaching of IL? (Give examples)é é
é é
é é
10. Do you offer any IL programme to final year psychology students as they prepare to do their final year projects? Yes/No (If yes, name the programme)é é é é é é é é é é .

What are the objectives of the programme?é é é é é é é é é é é é é é é é ..
é é
é é
é é
11. What challenges do you face that in your view impede effective IL learning?
é é
é é
é é
é é
12. How do you think the challenges in 11 could be addressed?
é é
é é
é é
é é
é é
é é
13. How do you think Information Communication Technologies have impacted on IL and learning in psychology programme?é é é é é é é é é é é é é é é é é .

é é
é é

14. Are you satisfied with the IL skill level of graduates from this university? Yes/No

    Briefly explain your answer.....

    é

    é

    é

    é

15. What do you think could be done to enhance IL in your university? .....

    é

    é

    é

    é

16. What is your general perception of IL as a programme in university education?

    é

    é

    é

    é

    é

    é

    é

    Again, thank you for your time, and offering information for this study.

APPENDIX XIII: DOCUMENT ANALYSIS GUIDE

1 TYPE OF DOCUMENT (Check one):
__ Course Syllabus
__ Other related document (specify)_____

2 UNIQUE PHYSICAL QUALITIES OF THE DOCUMENT (Check one or more):
___ Handwritten ___ Notations ___Typed ___ Other
If other, list here _____

3 DATE(S) OF DOCUMENT CREATION/UPDATE:
_____

4 AUTHOR (OR CREATOR) OF THE DOCUMENT:
_____

POSITION (TITLE): _____

5 DOCUMENT INFORMATION

A. List three goals of the course
1._____

2. _____

3. _____

B. How is the course taught?
__Lecture __Discussion groups __ Use of white/green/black board__ Use of LCD projector __ Use of technology (eg social media, wikis, moodle, web, etc)
Other _____

C. What evidence in the document helps you know why it was written? Quote from the document._____
_____
_____
_____

D. What assessment methods/tools are outlined in the document
_____
_____
_____

E.Content_____

Adapted from: Written Document Analysis Worksheet
Education Staff, National Archives and Record Administration, Washington, DC 20408.
Http://www.archives.gov/education/lessons/worksheets/document.html

APPENDIX XIV: ETHICAL CLEARANCE

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

15 August 2012

Mr EM Kanguha 211550434
School of Applied Human Science

Dear Mr Kanguha

Protocol reference number: HSS/0712/012D
Project title: Information literacy learning experiences of fourth year psychology students in Kenyan Universities

EXPEDITED APPROVAL

I wish to inform you that your application has been granted Full Approval through an expedited review process.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Professor Steven Collings (Chair)

/pm

cc Supervisor: Prof Stephen Mutula & Dr Ruth Hoskins
cc Academic leader: Prof Johanna Hendrina Buitendach
cc School Admin: Mrs Doreen Hattingh

Professor S Collings (Chair)
Humanities & Social Sc Research Ethics Committee
Westville Campus, Govan Mbheki Building
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0)31 260 3587/8350 **Facsimile:** +27 (0)31 260 4609 **Email:** ximbap@ukzn.ac.za / snymanm@ukzn.ac.za

APPENDIX XV: KREJCIE AND MORGAN TABLE

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

APPENDIX XVI: GOALS AND PEDAGOGICAL APPROACHES IN TEACHING AND LEARNING INFORMATION LITERACY

	Concepts	**Evidence**	**Themes**
Goals/Objectives	• Equip users with search skills • Enable exploration of library resources • Critical thinking • Meet users Information needs	• Couse syllabus • Handouts	• Student-centred outcomes • Lifelong learning
Course Content	• OPAC • E-Books • E-Resources • On/Offline sources • APA • Referencing • Library services • Organization of library materials • Types of libraries • Catalog use • Print sources • E-Journals • Copyright	• Teaching presentations • Course syllabus • Handouts • Flyers	• Information sources • Citation management • Information literacy • Information access
Teaching Methods	• Lecture • Hands-on • Planned seminars • Group work • Feedback forms	• Course syllabus • Teaching presentations	• Information access

Source: Analysis of Documentary Sources