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**An assessment of the integration of information literacy education into first
year programmes in the Faculty of Management Sciences at the Durban
University of Technology – Durban Campus**

By

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DECLARATION

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Dedicated to my wonderful parents, my amazing husband and my two beautiful daughters

ABSTRACT

Students at higher education institutions need to have the necessary skills to access, select, evaluate and use information effectively and responsibly, however, this is a huge challenge because many students at higher education institutions do not have these skills. This study was undertaken with the objective of assessing the integration of information literacy (IL) education and first year students' performance from the Departments of Management, Marketing, Retail and Public Relations of the Faculty of Management Sciences at the Durban University of Technology (DUT) taking into account the diverse student population. The sub-objectives were to establish the impact of information literacy integration on students, the support received from academic departments, the digital divide impact, the challenges of information literacy integration in terms of facilities and resources and what can be done to improve the teaching of information literacy. The three population groups were lecturers, subject librarians and first year students from the Departments in 2015. This study embraced a mixed method approach in the design of the research. Quantitative data was collected from students, lecturers and subject librarians by means of online survey questionnaires using Survey Monkey. Qualitative data was analysed thematically at a more detailed level from the open ended questions as well as from the focus group interview with students. The theoretical framework that supported the study involved a theory relating to the higher education environment. The findings of the study reveal that it is crucial for students to engage in information literacy initiatives and recommends embracing the integration of information literacy into course programmes. The study recommends that the library seeks ways of finding extra venues for the teaching of information literacy and to find ways to increase bandwidth across campus so that computers are faster. Another important recommendation is that students receive computer training before attending information literacy classes. This will ensure that students have basic computer knowledge and it will contribute to combating the digital divide issues, leading to fewer interruptions.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACRL:	Association of College and Research Libraries
ALA:	American Library Association
CONUL:	Consortium of National and University Libraries
DP:	Duly performed
DUT:	Durban University of Technology
ICT:	Information and communication technology/ies
IL:	Information literacy
IIL:	Institute for Information Literacy
LIASA:	Library and Information Association of South Africa
LIS:	Library and information services
NQF:	National Qualifications Framework
SAQA:	South African Qualifications Authority
SCONUL:	Standing Council of National University Libraries

CHAPTER 1

INTRODUCTION

1.1 Background

Information literacy is defined as a set of abilities that require individuals to “recognise when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (Association of College and Research Libraries 2016). Information literacy is about having the ability to identify the need for information; know the importance of accurate and authentic information; develop search strategies to assist in finding information; source information; evaluate information; and finally, use and organise information effectively (Andretta 2005: 15).

Many students enter higher education institutions without information literacy skills and they are expected to achieve some level of information literacy that will assist them to source information and use it appropriately in their academic studies. According to Gross and Latham (2007: 333) “it is crucial to integrate information literacy skills education into higher education effectively if we wish students to be full participants in tomorrow’s workforce”.

Students at higher education institutions are required to access, select, evaluate and use information effectively and responsibly. However, this is a huge challenge because many students do not know how to achieve this. The Library and Information Services (LIS) Transformation Charter of the National Council for Library and Information Services (2014: 31) identifies information literacy education as “a priority for university libraries”, pointing out that a survey of employers’ expectations of graduates conducted by the oversight body Higher Education South Africa in 2007 reported concerns that many graduates lack the ability to find and use academic information (Higher education in South Africa: 2015).

The Durban University of Technology (DUT) is a higher education institution in South Africa that stems from a disadvantaged background. Students attend universities from backgrounds with limited exposure to libraries and a lack of information literacy skills (De Jager and Nassimbeni 2002: 168). They experience challenges with computers and issues with the digital divide and information and communication technology (ICT) skills. Cullen (2001: 311) states that the digital divide is the gap that exists between students with access to ICT and those without access and Attewell (2001: 252-253) indicates that this is a worldwide issue.

De Jager and Nassimbeni's (2003: 114) survey of university libraries in 2002 resonates with this finding and proposes that information literacy programmes should take into account past experiences that may either hinder or enhance students' learning. According to De Jager, Nassimbeni and Underwood (2007: 143) it is impossible to offer online courses because many of the students emerge from rural areas. According to Sayed's seminal research (1998: 83) there are significant differences between students from advantaged and disadvantaged schools, the latter requiring more information literacy training. Adeogun (2003: 12) believes that students need to be skilled and there must be proper infrastructure for effective teaching and learning to take place. This view coincides with Chipeta, Mostert and Jacobs (2009: 53) that the inability of students to operate computers slowed down teaching and this frustrated librarians who had one hour to teach. These broader issues were discussed and formed part of the study as they are significant issues in the integration of information literacy at DUT. The researcher believes that many students at higher education institutions do not have these required information literacy skills. This study was undertaken with the objective of assessing the integration of information literacy (IL) education and first year students' performance. Students were from selected departments of the Faculty of Management Sciences at the DUT taking into account the diverse student population.

1.2 Problem statement

The information literacy skills integration initiative has been underway at DUT since 2008 and the institution's decision to adopt the integration route was in terms of best practice principles. Further details are provided in Chapter 2. The intervention of DUT in relation to information literacy was in response to many students, both past and present, entering higher education institutions without adequate information literacy skills. These students are expected to achieve some level of information literacy skills at these tertiary institutions that will assist them to find information, use it responsibly and improve their first (and subsequent) years of academic performance.

This leads to the first key research question:

The first key research question: What has been the impact of IL integration?

Although information literacy is offered to all DUT students, not all students received the integrated training as this was dependent on the Faculty and Department requests for such training. Information literacy integration was introduced into the curriculum of Departments

who requested the intervention in a formal way by means of using students' course assignments and formal assessments such as credit bearing assignments and tests. This intervention, once it was introduced worked well and seemingly had a positive impact on student's work but also emerged with challenges.

The intervention was DUT's response to the problem of students arriving for study with limited or no information literacy skills. It will continue to be a response for the foreseeable future given that it is not likely that the issue of information literacy is going to be resolved at the school level in the future. However, this intervention by the DUT has been in place for a number of years but without any formal assessment verifying its success or lack thereof notwithstanding that anecdotal information suggests a successful intervention program.

This leads to the below-mentioned key research questions:

The second key research question: What were the challenges experienced?

- Has there been enough support from the academic departments?
- What were the challenges of IL integration in terms of facilities and resources?
- What ways did the digital divide impact on the teaching of first year students?

The third key research question: What can be done to improve the teaching of IL?

The broad purpose of the study was to assess the integration of information literacy education into some of the programmes of the Faculty of Management Sciences at DUT, taking into account the teaching and learning of information literacy and the diverse student population.

1.3 Importance of the problem

The researcher has been involved in teaching information literacy within specific departments at DUT for ten years and has discovered that many students lack information literacy skills. The integration of information literacy into the curriculum began with the Department of Management and progressed gradually to the Departments of Marketing, Retail and Public Relations. From the researcher's experience, the integration has improved the way in which

students write assignments and has impacted positively on the pass rate. However, documented, verifiable evidence pointing to this positive impact has been anecdotal and there has been no formal assessment of the integration of information literacy into the curricula of these Departments since its inception eight years ago. It is this “gap” that this study seeks to address. Furthermore, this study assesses the integration of information literacy training at DUT.

It is anticipated that this research study will be of value to first year students from all Departments and Faculties with the intention of providing them with crucial information literacy skills not only to enhance their first year performance but to transform them into lifelong learners. Awareness would be raised with lecturers from other Departments and Faculties of the integrated information training that has benefited the students from the Departments of Management, Marketing, Retail and Public Relations by providing verifiable evidence. Whereas all subject librarians at DUT teach information literacy, not all training is fully integrated. This study presents the opportunity for subject librarians to look at different styles of teaching such as the integrated method, especially with the use of assignments from students’ coursework. More importantly, it is anticipated that the findings of this study will add value to the current integrated information literacy programme offered at DUT by identifying the challenges experienced and thereby offering recommendations to resolve these issues. Furthermore, in the absence of any formal assessment of the programme having been undertaken since its inception, the study can be viewed as a timely one given that the programme urgently requires verifiable proof of success, with formal reviews and subsequent improvements to the program to ensure its sustainability. Finally, the intention of the study is to contribute to innovative and effective learning, teaching and assessment strategies that will enable students to graduate with lifelong learning information literacy skills and, by so doing, and in the short term, enhance their overall academic performance at DUT.

1.4 Research methodology

The research methodology adopted in this study comprised a mixed method approach making use of both qualitative and quantitative data collection methods. It was anticipated that the collection of data from the three population groups (students, lecturers and subject librarians) would enhance the findings and verify the reliability of the study. Online questionnaires were used as one of the data collection methods and were administered to the three population groups. A total of 327 students attended the information literacy classes, of which 177

participated in the online survey. All of the six subject librarians and 10 lecturers who were involved in the information literacy classes participated in this study. A focus group interview was the second data collection method and this was conducted with six students who had already participated in the online survey. An assortment of literature was referenced to understand the requisite information for the research instruments. Quantitative data from the survey and qualitative data from the open ended questions, including questions from the focus group interview were analysed (the latter via content analysis). Findings are presented using tables and figures. The above-mentioned provides a summary of the Research Methodology undertaken in this study with further details provided in Chapter 3.

1.5 Limitations and delimitations of the study

Limitations are issues or influences that are usually beyond the researcher's control and may affect the results of the study or how the results are interpreted. Stating limitations of the study is generally useful to future researchers providing insight on how to improve further studies on this subject matter (Simon 2011).

The first limitation of this study was that it was confined to the first year students who had completed integrated information literacy training in their first academic year in 2015 (but who are currently in second year) at the DUT only and that, to selected departments only. The second limitation was that of student participation. Of the 327 surveyed students who attended the information literacy classes in 2015 (in their first year of study), only 177 were available to participate in the survey.

Delimitations, conversely, are factors that affect the study over which the researcher has limited control. Hence, these factors are excluded from the study and tapered to establish limitations or boundaries regarding the population that will be studied and the literature that will be reviewed.

A delimitation of the study was that it focused on "first year" students only. However second and third year students may have benefitted from the same integrated teaching method, having missed out on the training in their first year of academic study, they were excluded from this study. As mentioned above, the study focused on DUT students only and all other universities were excluded from this study.

1.6 Assumptions made in the research

The study targeted a total of 327 students with only 177 participating in the survey. It is assumed that the response rate of 54% is representative of the entire population of 327. A further assumption is that the students who participated in the survey were sufficiently proficient in the English language given that DUT is an English medium teaching facility and they had already spent an entire academic year (2015) at DUT. As such, the researcher did not administer any English language proficiency test of her own. Neither did the researcher test computer knowledge but she was on hand when the survey was undertaken to answer questions/queries. There were no “takers” to the latter thereby assuming that the students possessed the requisite computer skills which they would have developed during their first academic year.

1.7 Theoretical framework

There are various models, theories and standards for information literacy. This study adopted the American Library Association (ALA) Information Literacy Competency Standards for Higher Education (2000). The ALA Information Literacy Competency Standards is internationally accepted and universally applicable and recognised as an “all-encompassing” definition of an information literate person (Jiyane and Onyancha 2010: 2). This is in keeping with the DUT mission of “student centeredness” and at first year level of study, the ALA standards provide a suitable impression for understanding information literacy. The ALA approach was adopted because these competency standards provide a framework for assessing the information literate individual. The role that information literacy plays in higher education is therefore crucial in ensuring that students are equipped with the necessary skills to become lifelong learners in the constantly changing information society as explained by ALA (2000). The various models and the model underpinning this study are discussed in detail in Chapter 2.

1.8 Definitions

The following important concepts are defined. Further discussion of these will take place in Chapter 2, the literature review.

1.8.1 Information literacy

In the 1990s, the American Library Association (ALA) proposed a generally accepted definition of information literacy which could contribute to a society of lifelong learners (Behrens 1994: 317). It defined information literacy as a set of abilities requiring individuals to “recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information” (ALA 2000). This research has encompassed the definition of information literacy as stated by ALA (2000) whereby students have been taught to recognise their information need and be able to find and use information in a responsible way.

1.8.2 Digital divide

Mutula (2005: 122) defines the digital divide as the unequal access to ICT which can be considered in different ways. He believes that the internet is more freely accessible to the developed countries and that there is a distinct gap between the information rich and the information poor. At DUT students attending the same class form part of the digital divide issues, that is, there are students with previous access to information and communications technology (ICTs) and sufficient exposure to computers as well as students without previous access to ICTs and no exposure or not enough exposure to computers. These students with varying ICTs and computer knowledge make up the information literacy classes at DUT. The digital divide is defined by Cullen (2001) as a gap that is present between students with ICT skills and students without ICT skills and this exists in most countries between those who have ready access to the necessary tools of ICTs and the knowledge that ICT provides as compared to those without such access.

1.8.3 Information and communication technologies (ICTs)

Higher education institutions in South Africa recognise skills in ICT as crucial ones for students. These skills are regarded as an important basic prerequisite at many higher education institutions internationally (Attewell 2001: 252). ICTs are the technologies used in

the conveying, manipulation and storage of data by electronic means and is a term that includes a communication device or application, comprising of radio, television, phones, computer networks and satellite systems (Open University 2016).

1.8.4 Information literacy integration

“Information literacy integration is the desired result of a collaborative effort to develop an information literacy project” (Story-Huffman 2014). The collaborative team needs to develop a list of objectives, course ideas and assignments and integration may take a variety of forms with the process of integration including assignment topics that are covered in the information literacy curriculum. Information literacy integration is about creating a curriculum which enables students to develop the skills to learn independently and to carry on learning throughout their employment and life (CONUL 2011: 4).

1.9 Structure of research report

Chapter 1 gives the background to the study, identifies the problem and its key research questions. The importance of the problem is highlighted and the objectives and methodology of the study detailed. Limitations of and assumptions made in the study are also defined.

Chapter 2 provides the literature review and the theoretical framework of the study. This is a summary of prior research that has been conducted which is of relevance to this study.

Chapter 3 focuses on the research methodology used including the data collection methods, the population and the issue of reliability and validity.

Chapter 4 presents the findings of the study in the form of tables, figures and text.

Chapter 5 discusses the findings in relation to the relevant literature.

Chapter 6 concludes the study and presents recommendations.

1.10 Summary

In this introductory chapter, a background to the study was provided and the research problem was introduced. Key research questions underpinning the study were listed and the study rationale was outlined. Brief outlines of the methodology and theoretical framework were provided. The limitations and delimitations of the study were outlined and definitions of relevant key terms given. The chapter ended with a chapter by chapter overview of the remainder of the dissertation. The following chapter, Chapter 2, reviews the literature available and presents the theoretical framework.

CHAPTER 2

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

This chapter provides a detailed review of literature pertaining to information literacy in general and information literacy education. It examines higher education in South Africa and the challenges faced by first year students with specific reference to information literacy. An overview of literature on information literacy skills and the integration of these skills in higher education from international, regional (Africa) and local perspectives is also presented. The integration of information literacy with first year programmes at the Durban University of Technology (DUT) is explained together with key challenges that are faced.

A literature review is a place that marks the beginning of a research journey, providing an account of what has been published on a topic by researchers and provides evidence of research that has been undertaken (O’Leary 2010: 81-82). A literature review also allows for an integration on thoughts in relation to research that has already been done and demonstrates how the research being reported relates to previous research as well as how it gives rise to particular issues and ideas that the current research addresses (Denscombe 2010: 314).

There are various information literacy models portraying the different aspects of information literacy. These include Eisenberg and Berkowitz Big6 Model, Bruce’s Seven Faces of Information Literacy Model, Doyle’s Attributes Model, and the American Library Association Standards. The researcher briefly discusses each of these models and then explains the rationale for selecting the American Library Association Model for this study.

2.2 Information Literacy

The concept of information literacy (IL) was introduced in 1974 by Paul Zurkowski (Jiyane and Onyanha 2010: 12). The American Library Association (ALA) Presidential Committee on information literacy were the founders of the significance of the whole idea of information literacy in a report by the Committee. This study established that information literacy is regarded as a set of abilities requiring individuals to “recognise when information is needed

and have the ability to locate, evaluate, and use effectively the needed information” (American Library Association 2000).

In the 1990s, the American Library Association (ALA) proposed a generally accepted definition of information literacy which could contribute to a society of lifelong learners (Behrens 1994: 317). This definition arises from the ALA standards which defines information literacy as a set of abilities requiring individuals to “recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information” (ALA 2000).

The ALA information literacy standards are based on the acceptance and understanding of information literacy from the ALA’s Information Literacy Competency Standards for Higher Education (2000). The ALA information literacy competency standards are internationally accepted and universally applicable and recognised as an “all-encompassing” definition of an information literate person (Jiyane and Onyancha 2010: 12). In 2000, the Association of College and Research Libraries (ACRL), the Standing Council of National and University Libraries (SCONUL) and the Australian University Librarians all issued information literacy competency standards and specified what information skills are required by students. These all essentially underpinned the agreement that an information literate person is “one who can recognise the need for information, access the needed information effectively and efficiently, evaluate information and sources critically, incorporate the selected knowledge into one’s own knowledge base, use information effectively to fulfil a goal, use information ethically and, lastly, recognise that lifelong learning and active citizenship require information literacy” (De Jager and Nassimbeni 2003: 108).

Information literacy competency standards for higher education developed by the ACRL is the starting point for most universities where the focus is on implementing concepts of information literacy throughout the higher education curriculum (Eisenberg, Lowe and Spitzer (2004: 130). The competency standards comprise performance indicators, outcomes and standards based on the ACRL definition of information literacy. The information literate student should be able to “determine the nature and extent of the information need, access the needed information effectively and efficiently, evaluate information and its sources critically and incorporate selected information into his or her knowledge base, individually or as a member of a group, uses information effectively to accomplish a specific purpose and understand many of the economic, legal and social issues surrounding the use of information and accesses and use information ethically and legally” (ALA 2000).

Over the past decade, librarians have been actively involved in developing information literacy, striving to ensure that students become critically aware of information, be able to interrogate the information resources available, be in a position to evaluate the information and use it in an ethical manner. Information literacy skills give students a foundation to deal with any type of research that they may embark on in their future academic life.

The term frequently used for information literacy in the 1970s was “library instruction” which involved teaching students how to access library information tools such as the library card catalogues that in the early days, helped students to find information (Andretta 2005: 6). However, the term “information literacy” began growing in the 1990s and over the past decade it began to develop, in particular by librarians bringing about more of the academic concept in information literacy. Information literacy has progressed over the years and has developed to meet the needs of the present society by, for example, keeping up with the fast changing digital technologies (Andretta 2005: 6).

According to Olsen and Coons (1989) to be information literate is to understand the role and power of information and to have the ability to “locate it, retrieve it and use it in decision making”. While De Jager, Nassimbeni and Underwood (2007: 143) recognise information literacy as essential knowledge for today’s society, Bruce (2011: 107) asserts that information literacy is crucial for independent lifelong learning and forms the foundation or prerequisite for learning in our constantly changing information and technological environment.

In the context of lifelong learning, one of the most important elements of information literacy training is the need to be fluent in critical thinking. However, cultural sensitivities and diverse cultural backgrounds need to be considered, taking into account the possibility that critical thinking skills are not necessarily a part of students’ learning before entering higher education institutions (Baker 2013: 95). It is important to recognise that people have different learning styles which are often based on their cultural background and therefore the modes of teaching should be appropriate for different learning groups. It is also important to be conscious of the different learning outcomes and be able to measure the outcomes such as attitudes and values, knowledge and understanding, behaviour and skills appropriately. Because students stem from different backgrounds and then attend universities coming from backgrounds of sometimes limited exposure to libraries and information resources and lacking information literacy skills, they find it difficult to learn in a challenging technological environment (De Jager and Nassimbeni 2002: 168). They experience problems such as a lack of information and communication technology (ICT) skills. They find it very difficult to make use of information resources available in higher education institutions today.

De Jager and Nassimbeni (2003: 114) conducted a survey of university libraries in 2002 which resonated the issue regarding students' difficulties at universities and proposed that information literacy programmes should take into account past experiences that may either hinder or enhance students' learning. According to De Jager, Nassimbeni and Underwood (2007: 143) a training librarian at a university indicated that it was impossible to offer online courses because many of their students came from rural areas. According to Sayed's seminal research (1998: 83) there are significant differences between students from advantaged and disadvantaged universities, the latter requiring more information literacy training.

Naidoo and Raju (2012: 34) point out that universities make up varied groups of students, by "race, economic and digital background" and have varied literacy levels. Mwigie cited in Kavulya (2003: 218) agrees that students unfamiliar with retrieving successful information waste time going through the wrong sources. Librarians are therefore expected to teach students to access, locate and use academic information efficiently and effectively. According to De Jager and Nassimbeni (2002: 168) many students enter higher education institutions with no information literacy skills. They are not exposed to libraries or introduced to information literacy in the high schools that they attended. They enter university not knowing how to search and make use of information resources (De Jager and Nassimbeni 2002: 169). In addition, they bring to higher education a set of previous experiences, beliefs and disciplinary traditions that may either hinder or enhance their learning and these should be taken into consideration in activities aimed at developing the skills of information literacy in students. Adeogun (2003: 12) believes that students need to be skilled in information literacy and there must be proper infrastructure in place for effective teaching and learning to take place. This view coincides with Chipeta, Mostert and Jacobs (2009: 53) who are of the opinion that the inability of students to operate computers slowed down teaching and this frustrated librarians who had one hour to teach.

According to Eisenberg, Lowe and Spitzer (2004: 5) information literate students are competent and independent learners who know their information needs and are confident in their ability to solve problems. They adapt easily to change and display independence when managing technological tools with the focus on developing skills on how to make use of tools in order to find and use information. This independence also became obvious with the changes in the modes of delivery which evolved from basic orientation to fully integrated coursework modules (Andretta 2005: 6).

2.3 Information literacy teaching in higher education institutions

Higher education institutions are setting a trend in becoming dynamic models in constructing an information literate culture amongst students thereby creating lifelong learners. In South Africa as well as internationally, higher education has experienced a difficult period of educational and technological transformation with an increased diversity of students and a higher expectation of service quality. Higher education is assumed to provide learners with a wide range of skills and knowledge while striving to ensure that students are able to develop critical thinking skills (Lippincott 2005: 1).

The academic libraries at higher education institutions are becoming important role players helping students to obtain lifelong learning skills with regards to information literacy (Ojedokun 2007: 1). Higher education institutions across the globe and in South Africa are striving to develop information literacy competencies in their students and are therefore dependent on the academic libraries who are acknowledged as being central to the university and considered key players at the institutions. As higher education advances to address new challenges especially with technological changes, the academic library together with the institution have to be cognisant of these changes and keep updating staff and students of these changes. The information literacy tools available to search for information are also constantly changing and developing and students therefore need to be kept up to date with these changes.

The growth in the amount of information available as well as the new technological tools available to find information has changed the way in which academic libraries teach information literacy (Kirkwood 2011: 6). Teaching has become student-centred, with a focus on the students' learning experiences and the library and the academic librarians play a crucial role in assisting students in gaining lifelong learning skills, especially the ability to know how to find information. For many years, academic librarians have been involved in providing students with library instruction as a whole but have now expanded the instruction to educate users to access, evaluate and use information from a variety of print and online sources within and outside of the library (Eisenberg, Lowe and Spitzer 2004: 130). The role of libraries in academic institutions is to bring knowledge to students and the faculties by providing access to scholarly resources and assisting them to find, evaluate and use resources (Emmons 2009: 143).

Eisenberg, Lowe and Spitzer (2004: 6) are of the opinion that when teaching information literacy, students need to be taught to “discriminate, select and analyse” information which

extends to critical thinking and the ethical use of information. According to Behrens (1994: 316) understanding and evaluating information are higher order critical thinking skills that are essential and information literacy programmes therefore require a revisit in order to accommodate information literacy to the fullest. Information literacy is a necessity for an active responsible citizenship and information literacy teaching can improve the attempts at educational transformation in producing independent lifelong learners.

To be able to teach information literacy skills in higher education, academic librarians must be well informed in the theory and practice of information literacy and to meet this need the ACRL has established the Institute for Information Literacy (IIL) that is committed to assisting individuals and institutions in integrating information literacy through the whole continuum of the education process. The IIL main goals are to prepare the academic librarians to become efficient and effective educators of the information literacy programmes, to give academic librarians support with the development and implementation of the information literacy programmes and to establish new relationships throughout the educational community for the development of information literacy curriculum development (Association of College and Research Libraries 2001).

Most academic institutions acknowledge the need for information literacy, however, budget constraints hamper the number of academic librarians that can become involved in the teaching of information literacy. Librarians find themselves overwhelmed with the workload of having to work with every department in the faculty to ensure that all students develop information literacy skills. In order to rectify the situation, the trend seems to be that some institutions have started developing programmes to prepare faculties to integrate information literacy skills into their courses (Eisenberg, Lowe and Spitzer 2004: 138).

To ensure that all students graduate from academic institutions with information literacy skills, information literacy initiatives need to be embraced by both faculties and librarians. According to Eisenberg, Lowe and Spitzer (2004: 139) in recognising the importance of information literacy, the trend is that universities across the globe undertake strategic planning to determine information competencies and to incorporate instruction in information competence throughout the curriculum ensuring that this becomes a graduate requirement for every student. Jiyane and Onyanha (2010: 11) are of the belief that information literacy should be embedded and integrated into the coursework of students' academic curriculum thus bringing about new ways of teaching and learning and improving students' information learning skills. The current trend is trying to integrate information literacy and electronic information into the

academic curricula and this is the movement nationally as well as internationally (Rader 2002: 379).

A survey conducted at the Cape Peninsula University of Technology, (Hart and Davids 2010: 25) investigated the effectiveness of an information literacy intervention for first year students. The intervention took the form of workshops that taught students how to find information for their assignments using the library catalogue and how to reference the works consulted. The results showed that more information literacy sessions were required and that the academics need to recognise the crucial role of librarians (Hart and Davids 2010: 25). Libraries are continuously developing and changing information literacy programmes and are providing hybrid services and resources for student lifelong learning, and as much as higher education institutions understand the vital role that academic libraries play, it is important to determine whether students are benefiting from this (Zhong and Alexander 2007: 141).

Behrens (1994: 316), Ojedokun (2007: 2) and (Zhong and Alexander (2007: 146) are in agreement that the information literacy courses that are designed by the academic librarians should not only teach library and research skills but should enforce and improve students' academic experience building on critical thinking, analysis and writing skills. The trend at most universities is acknowledging the main objective of teaching and learning which is to encourage and improve student learning and academic success and academic libraries can embrace this. Information literacy skills are used for problem solving and it enhances lifelong learning and is a skill which is continuously creating a difference in people who are learning every day of their lives (Tiemensma 2012: 157).

At most higher education institutions, academic libraries are creating a culture of lifelong learning by promoting academic success with the teaching of information literacy skills. Students are expected to develop critical thinking skills and graduate with the necessary knowledge and skills learnt at university that will contribute to making a positive difference in becoming lifelong learners in society, enhancing the country's workforce and economy (Ojedokun 2007: 1). Johnston and Webber (2003: 338) echo Ojedokun's (2007: 1) view in highlighting that students graduating from higher education should enter the workforce with the necessary information literacy and lifelong learning competencies required and Alston (2001) is of the view that graduates need information literacy for personal development and empowerment for "participative citizenship and social inclusion".

According to Lockhart (2015: 2) at the Cape Peninsula University of Technology (CPUT) information literacy teaching is one of the core functions of a library which ensures that users

are efficient in the discovery tools to navigate and access information. One of the ways in which the library has assisted faculties with this was to register a short course called the Certificate of Information Literacy which was offered in 2013. This certificate is mostly offered to first year and Extended Curriculum Programme students and consists of five modules which run over a five week period. Students are given an essay beforehand so that the teaching approach is focused around the topic of the assignment throughout the modules. This approach according to Lockhart (2015) is the most valuable because the experience becomes real as they apply the skills that they learn directly to their assignments with the help of the subject librarian. The assignments are marked with a rubric which includes the information literacy course and consists of a high weighting. In this way students take the course seriously. If the weighting of marks is low, then they lose interest and are willing to lose the information literacy mark.

The assessment is administered by means of a multiple choice test via a learning management system (LMS) in Blackboard. Blackboard is a software application for the administration, documentation, tracking, reporting and delivery of electronic educational technology courses or training programmes. It is also often referred to as an e-learning programme which is becoming the trend at many universities. With this intervention, a challenge experienced was the teaching load for librarians. To this end, assistance was provided by other librarians and senior assistant librarians. Other challenges experienced were not enough venues and the teaching of large classes. The large classes had to be divided into smaller groups which in turn lead to increased teaching loads and much repetition, for example explaining concepts and demonstrating catalogue and database searches to multiple groups in a course. Lockhart (2015) posits that other ways of addressing the challenge of teaching large classes and not having enough venues to teach is to incorporate emerging technologies such as screencasts and podcasts into the teaching. Librarians have subsequently started to incorporate these technologies in their teaching. Winterbottom (2007: 8) however, states that screen casting should not be used to replace face-to-face teaching, but to enhance it. According to a study administered by Corral (2007), information literacy teaching is embedded into 75% of course curricula in the United Kingdom while their aim is 100%.

At the Durban University of Technology (DUT), the fully integrated teaching is taught by a few subject librarians because not all faculties have accepted the information literacy programme to the full extent. The Departments of Management, Marketing, Retail and Public Relations from the Faculty of Management Sciences have had the fully integrated information literacy

programme embedded in their curriculum. This study aimed to assess whether this has been successful or not. Information literacy integration is discussed further in Section 2.4 below.

A new trend is the shift to online information delivery. This is the trend of blended learning with learning management systems and online tutorials (Shank and Dewald 2003; Stubbings and Brine 2003). At DUT, a new trend is taking place. Blended learning, the use of learning management systems and online tutorials are gradually being introduced as an enhancement to the information literacy programme.

Lockhart (2015) believes that continuous staff training and development is important to ensure that subject librarians are well prepared with the necessary skills to keep up to date with the latest trends and in so doing to in turn provide quality teaching which is essential in the implementation of a quality course.

Bundy (2004: 2) speculates that in higher education institutions today, the focus is on student centered pedagogy. Information literacy forms a critical link when it comes to developing students that are capable of lifelong learning which is a result of critical thinking, problem solving and independent thinking. It has been noted that progress in terms of this has indeed been made and that higher education offers solid possibilities for growth of information literacy education (McGuiness 2006: 575).

2.4 Information literacy collaboration, integration and assessment

According to Ojedokun (2007: 27) at any higher education institution, it is crucial to have the support of library management and the institutional management in order for successful information literacy initiatives to take place. Ojedokun (2007: 26) and De Jager and Nassimbeni (2005: 34) agree that it is important for collaborative efforts between the library and academic departments. They believe that the partnership in the teaching and learning process between academics and the library strengthens the links between information literacy, graduate skills and lifelong learning. Collaboration between the academic departments and the library is of vital importance to the success of an information literacy programme. Information literacy supporters believe that librarians should create strong partnerships with teaching staff for successful information literacy teaching to take place and that this kind of partnership should be given a great deal of attention (Behrens 1994: 319). Strong liaison and collaboration between the academic libraries, faculties and students needs to be fostered for successful information literacy teaching initiatives to take place (Harrison and Rourke 2006:

605). The importance of strong partnerships between academic libraries and faculties for effective information literacy initiatives at universities to take place and having a good working relationship brings about successful information literacy programmes which contributes to lifelong learning (De Jager and Nassimbeni 2005: 34).

Over the years, as the concept of information literacy skills instruction developed from library orientation to course integrated user instruction, librarians developed teaching material, guides, skills tests, web based tutorials and other online teaching modules. In most cases, the librarian's teaching was separate from the academic curriculum with no integration taking place. According to Christiansen, Stomblor and Thaxton (2004: 117) and Rader (2002: 242) when it comes to the teaching role, some faculties prefer to work alone because they do not see librarians as collaborators and do not appreciate the need for information literacy instruction.

As has been stressed above, information literacy is regarded as a critical component of higher education and Ojedokun (2007: 26) accentuates that integrating information literacy into the academic programmes is an excellent way in which information literacy should be offered at higher education institutions. Being information literate and integrating information literacy into the curriculum of programmes at any higher education institution is essential and a fine way for students to relate to their subject matter. Librarians have begun collaborating with academic staff to integrate information literacy into curricula and there are many examples of good practice in a number of institutions (Floyd, Colvin and Bodur 2008: 370).

According to a study conducted by Strittmatter (2012: 95) a successful faculty-librarian collaboration took the form of integrated sessions done by the librarian with graded online exercises and an assigned research memo. The effectiveness of the sessions was evaluated by comparing the scores from the online exercises and research memos between those who attended the sessions to those who did not attend. The results showed a big difference with those students who attended the sessions and they performed better than those students who did not attend the sessions. According to Strittmatter (2012: 96) faculty professors assume that students are competent in researching their assignments and provide little or no guidance, they rely on librarians to fill the gap. However, integrating information literacy into the faculty coursework requires more than just one session for it to be effective and have some value. There needs to be collaborative conversations about how to blend course learning objectives with information literacy concepts because most universities measure students' information literacy skills by using assessment techniques such as pre- and post-tests. Strittmatter (2012: 96) believes very strongly that effective library instruction of any kind is not done in isolation

and that collaborating with faculty on assignments and learning objectives leads to successful information literacy sessions. It is important to pay attention to learning outcomes and to identify suitable information literacy competencies for a course. It is imperative that librarians work actively with faculty to design meaningful research assignments and with this particular study, the librarian and faculty met throughout a semester to ensure that students were in possession of the information that they required for their assignments. At DUT the researcher has used a similar approach making use of exercises and assignments to integrate the information literacy programme into the coursework.

Cooney (2005: 15) believes that often assessment is not included in library instruction and information literacy teaching. According to the Association of College and Research Libraries (2000) it is important for an assessment programme to be designed by librarians and academics together. In this way, areas for further development can be found and makes it possible to build on learning goals already achieved. At DUT, formative and summative assessments were used by making use of class exercises, assignments, tests and examinations and these have proven to be valuable methods of assessment. The information literacy programme designed by the library at DUT has been an active programme for many years.

The assessment of teaching and learning at a university is essential and an important part of instruction and students need to know how to think critically. Asking students to demonstrate their understanding of a subject matter is critical to the learning process and it is essential to evaluate whether the aims, goals and objectives of a lesson have been met. According to Mackey and Jacobson (2010: xiii) it is a good idea to assess new courses at the beginning of a project rather than at the end so that feedback can be gathered and used to identify gaps where students are struggling and librarians can adjust their teaching accordingly. Information literacy has been integrated into the curriculum at many universities but in most cases into the general education programmes (Mackey and Jacobson 2010: xiii). A general education programme is intended to serve as a basis for lifelong learning and prepares students to think independently, understand and critically evaluate information as well as explore one's own culture and history as well as those of others (General Education Programme 2011: 1).

At DUT the general education programme has been piloted in 2016 and is an institutional wide programme. It is compulsory for all faculties across DUT to participate in the programme and the library information literacy programme is part of the module. However, because the general education programme is generic and basic, the information literacy programme is also basic but not fully integrated. Students across all faculties from different departments attend generic

information literacy classes. These students are mixed from different courses and they all sit together in the same information literacy classes and therefore it is not possible to have an integrated information literacy programme embedded in the general education programme. However, some form of formative or summative assessment takes place where students are either assessed during or at the end of the lessons and at other times, summative assessments take place by means of credit bearing tests.

Collaboration is the key to the designing of information literacy courses and therefore becomes critical in the planning and implementation of a pedagogical approach to information literacy assessments in order to give guidance to new and developing programmes. Furthermore when faculties work together with librarians, there is a much more cohesive strategy developed which makes the designing of assessments a collaborative effort in order to measure learning outcomes than when librarians work independently (Mackey and Jacobson 2010: xiv).

Over the years the emphasis of information literacy evaluation was on how librarians performed as teachers and what students gained from the teaching with regards to finding information and using information ethically in terms of referencing correctly. However, Rader (2002: 244) stresses that more effort should be made at integrating information literacy into the coursework which will enable them to become lifelong learners.

A different approach to assessing information literacy is to shift assessment from being teacher-prepared examinations to students demonstrating and assessing their own learning. This type of assessment may be in the form of portfolios, learning and research logs and rubrics. In this way students learn to reflect their own learning, growth and skills (Eisenberg, Lowe and Spitzer 2004: 101).

At DUT the information literacy assessment is administered during and after each lesson as a formative assessment and thereafter at the end of four to six lessons by means of a credit bearing test. Students are assessed after the lessons and thus have enough preparation before the assessment takes place. From class evaluations, some students believe that the lessons are far too many while at the same time feel that the lessons are too much to absorb. During the course of the four to six lessons, an integrated course assignment is used whereby information for the assignment is searched for on the library system by the students with assistance from the subject librarian and the information selected is evaluated by using specific evaluation criteria before use in the assignments. Once the assignments are completed, the subject librarian assists in the correcting of referencing before the assignments

are submitted to the departments to be marked. A credit bearing mark from the assignments contributes to the duly performed (DP) mark for all the students.

According to Fain (2011: 118) assessments in information literacy plays a major role with academic librarians and the knowledge gained from assessments can assist librarians to improve teaching and learning as well as assist in evaluating the effectiveness of the information literacy programmes. Assessing student learning is a challenge across universities and academic librarians find it difficult to assess the impact of information literacy on student learning. Fain (2011: 118) believes that academic librarians tend to depend on internal methods of assessments such as surveys and interviews and student evaluation after each lesson has been completed. Meade (1998: 3) states that it is vital to establish possible benchmarks to guide librarians towards best practice for the integration of information literacy of South African students. It is important to establish the nature of how students are being assessed and evaluated and to bring the academic programme in line with the National Qualifications Framework of the South African Qualifications Authority (SAQA). SAQA was established in terms of the National Qualifications Framework Act of 1995. The National Qualifications Framework is “the set of principles and guidelines by which records of learner achievement are registered to enable national recognition of acquired skills and knowledge, thereby ensuring an integrated system that encourages life-long learning” (SAQA 2000). SAQA has adopted a number of cross-field critical outcomes which are reflected in the National Qualifications Framework which are essential for the development of lifelong learning and are expected to be incorporated into specific qualifications. The critical outcomes adopted by SAQA which is applicable to information literacy is critical outcome four, which is to “collect, analyze, organize and critically evaluate information” (South African Qualifications Authority 2000).

2.4.1 Information literacy integration at international level

Emmons (2009: 144) conducted research at the University of New Mexico, whereby the emphasis was on building good working relationships between faculties and libraries, to bring about successful information literacy initiatives. The research was conducted between the library and the education faculty and the results reported on the infusion of information literacy throughout the coursework of a programme for teachers. It was noticeable that the collaboration between the faculty and the library was strong which made designing an instrument to measure information literacy easy. This partnership brought about a significant difference between the pre-and post-test results of the programme. This subsequently shows

that the integration of information literacy into any coursework is a fundamental element that contributes to lifelong learning.

According to a study conducted at the University of Auckland, the integration of information literacy into the academic curricula has become the “gold standard of information literacy education in higher education” and studies are demonstrating that the role of librarians is evolving from that of being service providers to being educators who are active contributors in curricular design in higher education (Moselen and Wang 2014: 1). This shift in role necessitates librarians to be furnished with pedagogic knowledge and skills to extend and further develop their understanding of information literacy. The research that was conducted at the university interviewed librarians and explored the development of a programme for subject librarians which focussed on the practical aspects of how to integrate information literacy. The findings from the interviews with librarians showed that, when asked how best integration could take place, most indicated good liaison with academic departments and having an understanding of the curriculum. Only one librarian indicated that integration could be achieved through an assignment related approach.

The University of Auckland has had an institutional information literacy guideline for many years and one of the objectives has been to make sure that information literacy is integrated into the academic curriculum of the university which was underpinned by the university’s strategic plan. The guideline sketches the roles and responsibilities of librarians, academic staff and other learning support units and highlights the collaborative liaison of information literacy integration between departments. Academic staff are responsible for making sure that information literacy is integrated into the curriculum and together with librarians and teaching and learning support staff, partner to provide opportunities for students to become lifelong learners (Moselen and Wang 2014: 2). Prior to the development of an integrated information literacy programme, various faculties within the university administered a number of successful information literacy initiatives but each faculty chose to do it in their own particular way, some choosing stand-alone credit-bearing courses and as much as there were numerous information literacy activities taking place, there was little consistency and no agreed understanding of information literacy or how it can be integrated into the curriculum. Librarians also felt frustrated and not confident enough to be able to confront information literacy integration effectively. The information literacy integrated model took into account how information literacy should be integrated into the course programmes using the information literacy guidelines and offer students ongoing opportunities to interact with information. It is important for all stakeholders, that is, subject librarians and academic staff to have a role to play, always taking into account methods of delivery and information literacy theories and

frameworks and in doing so scaffold students in their learning (Moselen and Wang 2014: 4). From the various integrated modules that were developed, the course outcomes spelled out an understanding of information literacy, responsibilities of stakeholders, good departmental partnerships, familiarity with assessments, ongoing information literacy interaction with information and using integrated assignments (Moselen and Wang 2014: 11).

According to Wang (2011: 7) a model presented at the Queensland University of Technology, emphasised the importance of information literacy guidelines and pedagogical theories in information literacy curricular development. It showed that information literacy can be integrated into the curriculum and that the higher education curriculum can be redesigned at institutional, programme and course levels. The model allows information literacy educators to understand the various aspects of the curricula integration of information literacy and the relationships between them and that it can be adapted to provide information literacy integration into different disciplines (Wang 2011: 719).

A study at York University (Bury 2011: 51) which investigated the information literacy instruction practices, attitudes and perceptions of the university faculties established that faculties believed strongly in the importance of information literacy integration. It also found that both the faculties and the library had similar goals for their students with the belief that students do not know how to do research and both agreed on the need to do something about this by working together in partnership to provide an integrated information literacy initiative.

2.4.2 Information literacy integration in Africa

According to findings of a study conducted by Baro (2011: 202) more than sixty library schools in Africa were investigated as to whether they offered information literacy in their Library and Information Science (LIS) curricula. The results showed that only a few of these schools offer the course but as a stand-alone and not as an integrated one. Some schools do not even offer it as a stand-alone but chose to offer it only as a topic in related courses. The reason for this is that many LIS departments lack either the technological facilities or qualified staff to teach the information literacy course (Baro 2011: 202).

Information literacy forms the basis for lifelong learning and universities across Africa should consider information literacy as something critical. Students are expected to find information for their assignments and projects and the most useful way to administer the course is by integrating information literacy. Universities should ensure that their students acquire the

necessary competencies in knowing how to learn, be able to formulate questions, access, evaluate and use different sources of information.

According to a study done at the University of Botswana library school, most students were under equipped with little or no information literacy skills. They lacked the ability to identify, locate, select, critically evaluate and apply the information needed for their studies (Mutula, Wamukoya and Zulu 2004).

Hartmann (2001: 53) noted the gap between students' perception of information literacy skills that was required at university and the skills that library and academic staff expected them to have. He recommended that they embed these information literacy skills into the curriculum so that they can be taught these skills in a variety of ways within the curriculum and constantly have them reinforced throughout their academic life.

2.4.3 Information literacy integration in South Africa

Sayed and De Jager (1997: 9) believe that the teaching of information literacy skills should be firmly embedded in students' coursework in order for them to see it as being meaningful. At a survey done at South African universities in 2002, the intention of the survey was to assess the extent of institutional support from universities. The survey also aimed at finding out the information literacy activities that could be identified. One of the questions probed the extent to which parent institutions showed strategic awareness of the importance of information literacy at the institution. Respondents comprised of South African tertiary institution educators and librarians and the result was that there was very little evidence of this (De Jager and Nassembeni 2003: 110).

Other questions asked were on the offering of generic courses as opposed to integrated courses, assessments and the different modes of delivery that were administered at institutions. There were mixed responses to these questions, whereby some respondents were in favour of stand-alone and generic information literacy courses, while others believed that courses should be integrated into the subject curricula. However, in cases where respondents agreed with information literacy integration taking place, it was mostly in the form of subject librarians presenting sessions on subject specific material. The most support was given to the integration of information literacy into the curricula that was credit bearing where the assessments were done by means of assignments and tests. Overall, the survey results concluded that certain competencies were embedded into the information literacy curricula at South African universities. It was evident that more teaching and training was required with

electronic searching of resources, however, it was repeatedly noted that basic computer skills and understanding the research process was still lacking with many students (De Jager and Nassimbeni 2003: 112).

According to Behrens (1993: 125) many South African librarians do not document and publish their information literacy activities and this was evident from the poor response received from the survey as discussed above. The survey also revealed that only four out of twenty six institutions had credit bearing and integrated courses and this was mostly for the extended curriculum programmes and not for mainstream programmes. This study also indicated that more discussions related to information literacy activities, initiatives and integration was left for the Library and Information Association of South Africa (LIASA) conferences where further discussions could take place. LIASA conferences will remain important to assist information literacy practitioners in the spread of information about activities and the dissemination of best practice. It was noted with concern by the participants in the survey that parent institutions still do not acknowledge the role of information literacy in their strategic mission statements. Librarians realise that they have a role to play, for example by lobbying, but this does not seem to be taking place to any large extent at present.

Bruce (2004: 9) emphasises that for the successful introduction of information literacy programmes, champions are required at the highest levels of institutional governance. This support still seems lacking in South Africa. The survey Emmons (2009: 144) cited above, supported findings that information literacy practitioners understand that the competencies and skills required for effective information literacy interventions are best taught when they are fully integrated into the subject curricula and taught by librarians and academics in partnership. At the same time such partnerships have not been realised to any considerable extent in South Africa and it seems that a need will remain for generic courses to be taught for some time to come. The assumption that information literacy skills are transferable and an essential component of lifelong learning, has not yet been thoroughly investigated or tested either. The survey and the published literature and reports indicated that information literacy practitioners realise that courses should be integrated and assessed. Most published reports on the assessment of information literacy interventions, however, were based on student evaluations, which did not attempt to quantify the amount learnt or the extent to which the interventions made any difference to the student learning experience. (De Jager and Nassimbeni 2002: 139-143; Fourie and Van Niekerk, 2001: 115-116).

2.4.4 Integration of information literacy with first year programmes at the Durban University of Technology (DUT)

There is strong liaison between the library and academic Departments of Management, Marketing, Retail and Public Relations of the Faculty of Management Sciences at the Durban University of Technology (DUT). This is why it became possible for the integration of information literacy into the coursework of programmes to take place effectively.

DUT developed the Academic Strategic Plan 2005 which emphasised the importance of students' academic experience at higher education being one of total learning encompassing the whole student. In terms of the plan the library is regarded as a unit that is involved in the actual teaching, learning and research which takes place. This fundamental role has been recognised by the library and explains its involvement in integrating information literacy into the curriculum of courses and by so doing, moving away from its supportive function. A learner guide, information literacy course, curriculum and a scheme of work for information literacy has been developed by the library. The information literacy course designed by the library is offered to all departments and faculties. However, attaining all the departments and faculties' participation remains a challenge (Durban University of Technology Academic Strategic Plan 2005).

The information literacy module presented and administered to the first year students from the Faculty of Management Sciences is integrated into the curriculum of some of the course programmes. There are several programmes within this faculty and as much as the course is offered to all departments, as noted above, not all academics are forthcoming in taking the opportunity to introduce the fully integrated course into the academic programme.

With a fully integrated information literacy programme, the lecturers from the specific participating departments that is, Management, Marketing, Retail and Public Relations set information literacy integrated assignments that feature in the study guide for the first year students. The information literacy course features on the students timetables as a subject that is compulsory. The assignment is credit bearing and contributes to either the student DP mark or the final exam mark. Approximately four to six information literacy lessons are administered by the subject librarians using the integrated assignments throughout all lessons. Students are taught how to find, select, evaluate and use ethically, information for their assignments. Students are taught how to reference using the Harvard referencing method. An information literacy test is administered to them once all lessons have been completed. The subject

librarians mark all tests and the marks are calculated and submitted to the departments for inclusion in either the DP mark or the final exam mark.

According to Secker and Coonan (2011: 4) an information literacy curriculum should be a continuum of skills, competencies and attitudes with an aim to help undergraduate students to develop an understanding of information that will empower them in being able to evaluate, analyse and use information beyond the academic arena and strive to become lifelong learners. An information literacy curriculum should demonstrate the following characteristics:

- A mission statement considering anticipated contributions and benefits
- Goals and objectives taking into account sound pedagogical practice
- Result from careful planning at programme, curriculum and institutional level
- Demonstrate support from both administration and institution
- Articulate with the curriculum with emphasis on contextual learning
- Result from collaboration between academic and library staff
- Pedagogy: multi-disciplinary approach supporting student-centered learning
- Adequate staff with appropriate expertise
- Publicity and outreach
- Assessment fully integrated.

At DUT, the course is called Information Literacy and the curriculum comprises of a study guide, scheme of work, lesson plans and an information literacy framework which have been developed by the subject librarians. Academic integrity, evaluating information resources, accessing information resources, analysing the topic, formulating a search strategy and recognising the information needed make up the information literacy course. The information literacy course attempts to empower students with skills to collect, analyse, organise and critically evaluate information from a variety of sources and use the information appropriately and responsibly. The information literacy course is an attempt to form part of a number of academic skills that builds on knowledge and competencies for students in their professional and personal life. The course curriculum also attempts to empower students with DUT graduate attributes, values and principles progressing from learning basic information skills to advanced skills. Lecturers and subject librarians' work together to integrate the information literacy skills into the coursework. The information literacy course curriculum information is included in the students' study guides and the lessons are included in the students' timetables. Additional study material including information on the learning management system,

Blackboard, for the course is available on the Library website. Lessons are made up of formative and summative assessments. The information literacy course curriculum comprises learning and teaching strategies, information literacy outcomes and assessments. The teaching of information literacy is activity based and student centered rather than the conventional teacher centered method. Students are given learning opportunities in the class guided by the subject librarian through a variety of tools and search techniques that they can use to find information for their specific needs. The information literacy outcomes are what students can ensure as a result of their learning experience. The assessment criteria are used to determine whether students have achieved the outcome. These are learning outcomes and assessment criteria for the course categorised within the information literacy themes. There are assessments that are measured to indicate the information literacy skills gained. The marks from the assessments are submitted to the course lecturer. There are also integrated assignments that contribute to an assessment mark.

2.5 Challenges of information literacy integration

There are various challenges with information literacy integration, some of which are the diversity of the audience, the digital divide which exists between students, the lack of information and communication technology skills and the stress of subject librarians trying to get students to understand how to search for academic information, think critically and use information responsibly. An important component of information literacy is the need to be fluent in critical thinking. However, this is an information literacy challenge because cultural sensitivities and diverse cultural backgrounds need to be considered, taking into account the possibility that critical thinking skills may sometimes not be a part of students' learning before they enter higher education institutions (Baker 2013: 95).

2.5.1 Information literacy, information and communication technology (ICT) and the digital divide

According to Adeogun (2003: 12) students need to have information literacy skills in order to search for the correct information for their assignments. Many students do not have these skills and therefore need to be taught how to use the necessary tools available to find information. This becomes a really big challenge for librarians because librarians have to spend more time teaching students how to use the mouse, the keypad and how to navigate the computer screen. Adeogun (2003: 12) believes that there must be proper infrastructure in

place at universities for effective teaching and learning to take place. Not enough computers and slow computers slow down teaching and this becomes difficult for librarians who have specific times during which teaching must take place.

Higher education institutions are faced with the challenge that many students entering university are from digitally disadvantaged backgrounds. They are introduced to ICT for the first time and many universities have no mechanism or policies in place to deal with these unprepared students (De Jager and Nassimbeni 2005: 31).

According to Baro *et al* (2013: 282) while librarians are attempting to assist students with information literacy, barriers such as lack of facilities, lack of understanding of information literacy, students' indifferent attitude towards attending the information literacy classes and low acceptance of the online approach are identified as negative factors when librarians attempt to promote information literacy training at the university libraries in Nigeria. Insufficient time allocated for teaching information literacy skills and students' tendency to be disinterested were also identified as barriers (Baro, Seimode and Godfrey 2013: 282). Challenges in the teaching and learning of information literacy are identified by Chipeta, Mostert and Jacobs (2009: 53) which include technological issues, diverse groups, language and cultural barriers, and lack of time and resources.

Lwehabura and Stilwell (2008: 49) revealed that information literacy is still new at some universities and agree with Chipeta, Mostert and Jacobs (2009: 53) that challenges such as absence of information literacy policies and hands-on solutions among librarians, the need for suitable library staffing and training and collaboration between librarians and teaching staff in information literacy activities, still remain. These challenges were also echoed by Johnston and Webber (2003: 340).

According to Ojedokun (2007: 24) in the past information literacy included the computer literacy aspect. However, this is not the case today and universities must therefore be prepared for the challenge of underprepared students in terms of computer literacy. At DUT, students are offered the end user computer course which forms part of their curriculum. This course is sometimes offered alongside or after the information literacy course is administered. This course should be given at the start of the semester so that students are better prepared when they begin the information literacy classes. Higher education institutions in South Africa recognise skills in ICT as crucial ones for students. These skills are regarded as an important basic prerequisite at many higher education institutions internationally (Attewell 2001: 252). In the South African context, because many students enter higher education with little or no

exposure to ICT, as a consequence, they lack the requisite skills. Regardless of the rapid growth of the Internet and other technology, many students at higher education institutions still do not have the necessary ICT and information literacy skills to search for, evaluate and use information (Katz 2007: 3). Although these students may be technologically literate they lack information skills that are appropriate for academic work and thus Lippincott (2005: 4) explains that they use inappropriate sources from the Web to support their thinking and ideas. There is a tendency for many of these students not to evaluate the information that they retrieve from the Internet. Students today are selecting information which they believe is appropriate for their assignments, however, the information sources that they select may not necessarily be academically relevant.

The digital divide is considered a gap that is present between students with ICT skills and students without ICT skills (Cullen 2001: 311). It is considered a gap that exists in most countries between those who have ready access to the necessary tools of ICTs and the knowledge that ICT provides as compared to those without such access. It is important to note that this gap may be because of geographical, educational or socio - economic factors.

According to Mutula (2005: 122) the digital divide refers to the unequal access to ICT which can be considered in different ways. He believes that the Internet is more freely accessible to the developed countries and for the information rich, however, the underdeveloped and developing countries who are considered information poor are disadvantaged and that many students that enter university from the rural areas have not been exposed to the Internet or any form of ICT before. While Mutula (2005: 122) posits that the digital divide is a “multi-dimensional phenomenon” involving the divergence of Internet access by developed and developing societies, the gap that exists between the information rich and the information poor, and, the divide that dictates who uses or does not use technology, clearly points out that “the digital divide is about people and not computers” (Salinas 2003: 132).

Higher education in South Africa and internationally are faced with the problem of the digital divide concerning ICT because students enter university with problems of not being equipped with computers at home as well as insufficient access to computers at university. This is the case at DUT as well where students attending the same class form part of the digital divide issues. For example, there are students in one class with different abilities because of the different knowledge that exists with them as regards to ICTs. Some students come from high schools that exposed them to computers and others did not have that privilege. Thus, these students sit in the same information literacy class but with different ICT abilities. The students with little or no ICT experience will need more help trying to find information as compared to

those students who had ICT exposure. This makes the teaching and administering of the information literacy programme difficult for the academic subject librarian. Students must be able to apply these information literacy skills in the context of technology and Katz (2007: 3) is a firm believer that ICT literacy is equal to information literacy combined with the digital environment. It is quite true, according to Rockman (2004) that the university students of today have grown up with the Internet and may be more technologically literate and more accepting of new technologies than their parents, however they do not make use of technology effectively when they conduct research or communicate. Breivik (2005: 22) is in agreement that as much as the net-generation of today have powerful information tools at their disposal, they are less information savvy than those of the past and therefore need training and practice in information literacy skills. The ability to handle information to think critically and solve problems as well as having the ability to use ICTs is a way of researching and communicating information through digital environments. These skills are just as important as reading and writing were in the early days.

Another challenge with information literacy is trying to get support from academic staff and building a collaborative relationship with them to work together as an information literacy team. According to Ojedokun (2007: 26) and De Jager and Nassimbeni (2005: 34) it is important for collaborative efforts between the library and academic departments. They believe that the partnership in the teaching and learning process between academics and the library strengthens the efforts of information literacy teaching. Collaboration between the academic departments and the library is important to the success of the programme. Librarians should create strong partnerships with academic staff for successful information literacy teaching to take place and often this is not the case with most institutions (Behrens 1994: 319).

2.6 Information literacy models and standards

With the current practices of information literacy, the student and student centeredness is now crucial and the focus is no longer on the lecturer as was the case in the past. According to Lonka (2012:16) learning should be regarded as a dynamic development in one's knowledge base with a positive influence and it should become one that higher education institutions promote as a culture that the library should become actively involved in. There are various information literacy models portraying the different aspects of information literacy and these include, amongst others, Eisenberg and Berkowitz's Big6 Model, Bruce's Seven Faces of Information Literacy Model, Doyle's Attributes Model and the American Library Association

Standards. Each of these models will be briefly discussed and the rationale for the selection of the American Library Association Model for this study explained.

2.6.1 Eisenberg and Berkowitz Big6 Model

The model developed by Eisenberg and Berkowitz (1990) called the Big6 is a widely known and used approach to teaching information and technology skills. This information skills model employs six steps where information literacy is described as systematic information behaviour (Eisenberg and Berkowitz 1990 and Tiemensma 2012: 158). The Big6 problem-solving model integrates information search and use skills along with technology tools in a methodical process in order to find, use, apply and evaluate information for precise needs and tasks and includes a systematic set of actions. There are six stages to the model which are: task definition, information seeking strategies, location and access, use of information, synthesis and evaluation. This model can be used whenever one is faced with an information problem (Eisenberg 2008: 40) helping one to reorganise information needs through a systematic set of activities that can be used as a framework for solving problems. According to Eisenberg (2008: 42) the Big6 is not a prescriptive model and the stages do not need to be completed in the order that they appear in but it is important for all the stages to be completed for overall success and it gives the teachers a way of assessing the outcomes of the skills taught.

2.6.2 Bruce's seven faces of information literacy

Bruce's seven faces of information literacy (Bruce 1997) is a relational model framing information literacy in seven different ways of "seeing" and experiencing the use of information. The seven faces of information literacy consist of information technology, information sources, information process, information control, knowledge construction, knowledge extension and wisdom. With this model, becoming information literate comprises being aware of various ways of engaging with information.

The relevance to information literacy practices in this instance is derived from everyday life where relationships can be established between the different faces and the workplace processes which relates information literacy to the learning organisation (Bruce 2011: 330). The seven faces of information literacy is a useful tool for managers and educators and helps in education and training, allowing educators to be able to ascertain the levels of information

literacy experience of learners. It also helps learners to expand familiar experiences as well as enables them to delve into unfamiliar experiences (Bruce 2011: 332).

2.6.3 Doyle's Attributes Model

In Doyle's attributes model, the information literate person is involved in acquiring and demonstrating certain information literacy problem solving attributes (Doyle 1992). Doyle's attributes model arises from a study whereby experts were in agreement of characteristics related to information literacy. This model shows the information literate person as one who recognises that information is accurate and complete and that it is needed for intellectual decision making. The person recognises the need for information, formulates, identifies, develops, accesses, evaluates, organises and integrates information and uses information in critical thinking and solving problems. According to Doyle (1992: 4) learning to be information literate incorporates acquiring and demonstrating these attributes.

2.6.4 American Library Association Model

The American Library Association (ALA) (2000) perspectives on information literacy has been detailed earlier in the chapter. In summary, according to the ALA, information literacy is an intellectual framework for understanding, finding, evaluating and using information. The ALA IL standards were devised by information professionals and they consist of learning outcomes and processes. According to ALA (2000) and as mentioned in the previous chapter, an information literate person should be able to "determine the need for information, access the needed information effectively and efficiently, evaluate information critically, incorporate the selected information into one's knowledge, use the information effectively, understand the economic, legal and social issues surrounding the information and use the information legally and ethically".

2.7 Rationale for choosing the American Library Association Model

According to the Association of College and Research Libraries (2000) there are five competency standards for higher education that the information literate student should meet. These competency standards are determining the scope of information required, accessing the required information effectively and efficiently, evaluating critically the information and its sources and incorporating this new information into his or her existing knowledge base, using information effectively in his or her studies and work and understanding the economic, legal

and social issues pertaining to the use of information and to accessing and using information ethically and legally (ALA 2000: 84).

This study will be based on the American Library Association (ALA) (2000) Information Literacy Competency Standards for higher education as the model has several advantages over the Eisenberg and Berkowitz Big6 Model, Bruce's Seven Faces of Information Literacy Model and Doyle's Attributes Model. The advantages are noted below:

Firstly, the ALA information literacy standards for higher education (ALA 2000) were developed through widespread consultation between teachers and information professionals. These standards were made up of learning outcomes that consisted of information literacy, independent learning and social responsibility. Bruce (2002: 4) believes that models and standards like these are used for communicating information literacy for curriculum design, evaluation, developing staff and assessing students. In this context information literacy exposes the richness of information literacy in which students learn from models that are created to meet the needs of explicit educational contexts.

Secondly, according to Bundy (2004), other information literacy models and standards are based on the perspective of the ALA standards. Thirdly, the ALA model on information literacy in higher education is an internationally accepted one. In the fourth place, the model provides an all-encompassing definition of an information literate person (Jiyane and Onchancha 2010: 3).

According to the ALA, Information Literacy Competency Standards for higher education, an information literate person should be able to achieve the following:

- Determine the scope of information needed
- Access the required information effectively and efficiently
- Evaluate information and its sources critically and incorporate this information into one's knowledge base
- Use information effectively in studies and work to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information
- Access and use information ethically and legally.

These standards have been evaluated and disseminated into various areas encompassing performance indicators and outcomes and are valuable competencies that educators can

implement in order to assess students information literacy skills. In the fifth place, by using this model, educators are able to identify gaps with students' learning. The researcher will also be able to identify gaps in students' learning and in this case with the surveyed students, being the focus group. According to Saunders (2009: 99) the part played by information literacy in higher education is in keeping with the American Library Association. The information literacy skills acquired by students at higher education as designed by the American Library Association are critical and necessary in producing proficient, well versed students in society. According to the ALA (2000) "curricular integration affords many possibilities for furthering the influence and impact of student-centred teaching methods." Improving information literacy skills increases the chances for students to learn independently and they become engaged in using a variety of information sources to develop their knowledge and improve their critical thinking skills for independent learning.

According to ALA, information literacy is a set of abilities requiring individuals to "recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information. The Durban University of Technology's mission of "student centeredness" and at first year level of study, is in keeping with the ALA standards and is a suitable concept for understanding information literacy. The ALA competency standards can be implemented to evaluate the integration of information literacy education of first year students from specific departments of the Faculty of Management Sciences as it provides a framework for assessing the information literate individual. The role that information literacy plays in higher education is crucial in ensuring that students are equipped with the necessary skills to become lifelong learners in the constantly changing information society as explained by ALA (2000).

(Note: It needs to be pointed out that at the time the researcher started with the thesis, the ALA standards were superseded by a new framework for information literacy for higher education in 2016. This framework was also subsequently used as a guideline whereby six frames for information literacy offerings were identified by the ACRL framework (Association of College and Research Libraries 2015). The frames were:

- Authority is constructed and contextual
- Information creation as a process
- Information has value
- Research as inquiry
- Scholarship as conversation
- Searching as strategic exploration.

2.8 Summary

As detailed in this chapter which comprises the literature review, there is no single approach to the models or theories of information literacy. For the purpose of this research, the model proposed by the American Library Association for information literacy was adopted. Apart from outlining and discussing the various models the focus of this chapter was on the integration of information literacy into the curriculum. Issues covered included the concept of information literacy, information literacy in higher education institutions, and the challenges relating to the teaching of information literacy including what is referred to as the digital divide. Where appropriate, reference was made to the situation at DUT. The next chapter will discuss the methodology employed by the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology can be seen as the science of learning or the science of finding out how research is carried out and how social scientists go about finding out information about human life. Babbie and Mouton (2001: 75) and Babbie (2010: 4) describe research methodology as being able to focus on the research process, tools and procedures. In essence it is the way in which researchers go about their work of describing, explaining and predicting phenomena. Research methodology guides the researcher on how to solve problems as viewed by Leedy and Ormrod (2013: 76) who are of the opinion that research is a systematic process of collecting and analysing information and finding a methodical way to solve a research problem.

The main focus of this chapter is on the research methodology that was used to address the research problem. It focuses on the population, the different data collection instruments used, such as the online self-administered questionnaire and the focus group interview, the methods used for data analysis as well as the reliability and validity of the study.

The main objective of the research problem addressed in this study is to assess the integration of information literacy education of students. The main method used is the self-administered online questionnaire followed by the focus group discussions for an enhanced understanding of issues relating to the integration of information literacy.

3.2 Research approach

According to Ivankova, Cresswell and Clark (2007: 255) and Leedy (1997: 104) there are three categories under which research is conducted and these are qualitative, quantitative and mixed methods. Qualitative research is a descriptive format while quantitative research refers to a more statistical format of research. Mixed methods research involves the combination of collecting and analysing both qualitative and quantitative research such as surveys and focus group interviews. In this study, a mixed method approach was adopted, embracing a post positivism / pragmatism paradigm. A post positivism / pragmatism paradigm maintains the idea

of objective truth, when the truth is met without any bias caused by feelings, ideas and opinions. De Vos *et al* (2011: 7) emphasises that post positivism / pragmatism “relies on multiple methods of capturing as much of reality as possible”. Researchers in this type of paradigm believe in multiple perspectives such as group interviews and in the case of the present study, the focus group provided a post positivist grounding whereby “additional data was used to triangulate existing evidence” to the research (King and Horrocks 2010: 62).

King and Horrocks (2010: 7) and Babbie and Mouton (2001: 217) are of the view that quantitative research is about measurement, numbers, percentages and values and the latter authors believe that methodological triangulation is a fine way to gather information about events in that it involves using more than one method and can provide more comprehensive data. Quantitative research involves the accurate capturing of numerical data and measurements that can be counted (King and Horrocks 2010: 7) and analysed efficiently. It draws conclusions for large numbers of people, and controls bias. Quantitative research does not record participants’ voices and it is impersonal as it provides limited understanding of the participants answers (Creswell 2015: 5). In terms of the present study, the quantitative data was obtained from the surveyed students, lecturers and subject librarians via the closed questions in the respective questionnaires.

Bertram and Christiansen (2014) and King and Horrocks (2010: 7) present the view that qualitative research addresses ideas, experiences, values, and textual or verbal data. Yilmaz (2013: 312) suggests that qualitative research can be described as an “emergent, inductive, interpretive and naturalistic approach to the study of people, cases, phenomena, social situations and processes in their natural settings in order to reveal in descriptive terms the meaning that people attach to their experiences of the world”. This type of research is based on a constructive epistemology that “explores what it assumes to be a social constructed dynamic reality through a framework which is value laden, flexible, descriptive, holistic and context sensitive from the perspectives of people” (Yilmaz 2013: 312). It is more subjective and open-ended in nature while providing detailed perceptions of a few people, capturing the voice of the respondents and is based on the views of the respondents and not the researcher (Creswell 2015: 5). In terms of the present study, qualitative data was captured from the focus group interviews of students involved in the information literacy training as well as from the open questions in the self-administered questionnaire.

The key reason that the researcher adopted a mixed method approach (notwithstanding a stronger lean towards the quantitative approach) was because both quantitative and qualitative methods were considered important in gaining a better understanding of the

research problem (Ivankova, Cresswell and Clark 2007: 263). In this case, the issue was to understand the integration of information literacy education into the first year curriculum for students from the Departments of Management, Marketing, Retail and Public Relations of DUT.

3.3 Research design employed

According to Bless, Higgson-Smith and Kajee (2006: 43) the research design that is chosen for a study is influenced by the research problem and the purpose of study. In light of this, the survey method was adopted for this study.

3.3.1 Survey research method

Babbie and Mouton (2001: 32) suggest that the survey research method is possibly one of the finest methods available to the social scientist when collecting data which is required to describe a large population. A survey is an “information collection method used to describe, compare or explain individual and societal knowledge, feelings, values, preferences and behaviour” (Fink 2009: 1). Surveys can be self-administered that is, they can be filled out by the respondent alone or with assistance. They can also be in the form of an interview in person, telephonically or via email. Surveys can be in paper format or online to collect data and usually comprise self-administered questionnaires and/or interviews. The researcher chose self-administered questionnaires as the main survey instrument as opposed to individual interviews which would have been too time-consuming. The difficulty of arranging these individual interviews, in effect, “pinning” students down for the interview, was another factor. A single focus group interview was found to be more efficient and was held, after the main questionnaires were administered, with a small group of students for a more thorough exploration of the contextual responses to questions.

Most surveys use multiple choice questions which are reliable and easy to use and this study therefore made use of this method (Fink 2009: 15) for the closed questions (quantitative research method), limiting the respondents to choose from a list of preconfigured answer choices (Du Plooy-Cilliers 2014: 1530). The open questions (qualitative research method) required the respondents to answer in their own words thus awarding the respondents with spontaneity and freedom to answer (Oppenheim 1992: 115; Cresswell and Clark 2011: 176). Survey research has its advantages and disadvantages which are addressed below.

A research instrument should always have an explanation of why the research is being undertaken so that the respondents have an idea of the research (Fink 2009: 36). In the case of this study, all instruments administered to students, subject librarians and lecturers were introduced by means of an explanation of the purpose of the study followed by the respondents consent.

3.3.1.1 Advantages and disadvantages of the survey method

The advantages of the online survey research method is that it allows access to individuals in distant locations, reaching of difficult to contact participants and the convenience of having automated data collection. It reduces time and effort, is less labour intensive and saves on response time by allowing researchers to collect data from a large number of respondents while they focus on other tasks at hand. It also enables communication among people who may be hesitant to meet face-to-face (Wright 2005).

The disadvantages of this type of survey includes uncertainty over the validity of the data and issues concerning the design, implementation and evaluation of the survey (Wright 2005). Respondents must be able to read, see and write and their level of literacy and familiarity with the language being used needs to be adequate to cope with the demands of the survey. If online surveys are administered then there needs to be reasonably fast, reliable and uninterrupted internet access. A further consideration is that questionnaires do not always look the same in different browsers. In addition, respondents may have different levels of computer expertise (Fink 2009: 9). However, the researcher was not confronted with any of these shortcomings. The students were not only sufficiently literate, but they were familiar with the language used and had the necessary computer skills to complete the survey. In addition, the researcher was present in the DUT venue to address any queries and issues that were raised. Although survey research can be demanding and sometimes tedious for the respondents, the researcher was able to overcome these limitations owing to the amicable working relationship between the students, lecturers and subject librarians.

3.4 Population and Sampling

“Population refers to the category of people from which to draw the sample” (Davies 2007: 55). Bless, Higson-Smith and Kajee (2006: 98) postulate that a population is the whole set of people who are the focus of the research and it is important to clearly define the population. It

is not always possible to study an entire population therefore only a subset of a population can be studied which refers to sampling (Goddard and Melville 2001: 34). A sample is very simply defined as a chosen group that represents a larger group on whom the research will be carried out. In terms of the present study, the target population were lecturers, subject librarians and the 2015 first year students from DUT and a census approach was chosen which is discussed further below (Wisker 2001: 138).

Bless, Higson-Smith and Kagee (2006: 99) refer to the “boundary condition” which assists the researcher in understanding what belongs in a population. The present study had three such boundaries. The first boundary was that although all subject librarians taught information literacy, only six were selected for this study because only these six subject librarians were involved with the fully integrated programme with the Faculty of Management Sciences and more specifically the Departments of Management, Marketing, Retail and Public Relations. The second boundary was that although all students at DUT are taught information literacy, only students in the above-mentioned departments were involved as it was only with these departments that information literacy education had been integrated into the curriculum. The third boundary was that only academic staff directly involved with information literacy integration into the curriculum were identified to participate. These were the boundaries that were set to define the populations of the study.

The researcher decided to carry out a census as an alternative to sampling. A census collects information from every individual of the population unlike other research where the researcher may decide to use sampling. A census approach comprises of obtaining information from the respondents and recording the information in a systematic way (Babbie and Mouton 2001: 230). At DUT, every first year student that had undergone the information literacy integrated training in 2015 was included in the study, ensuring that the selection process was without bias (Du Plooy-Cilliers, Davis and Bezuidenhout 2014: 138). Questionnaires were thus made available to all students in the population. There were 327 students in the population who were involved in the integrated information literacy training and all were asked to participate and complete the questionnaire. However, only 177 students completed the questionnaire giving a response rate of 54%. Ten lecturers and six subject librarians comprised the other populations and participated and completed the questionnaire – a response rate of 100%. Table A1 below illustrates the student enrolment figures for each department and the number of students from each Department (as provided by the departmental secretaries) who completed the survey.

Table A1: Students' IL attendance and survey participation

Department	Population and IL attendance	IL survey participation	Percentage
Management	94	29	31%
Marketing	115	60	52%
Retail	52	38	73%
Public Relations	66	50	76%
Total	327	177	54%

3.5 Data collection and instruments

Data collection is the methodical and organised approach to collecting information from different sources in order to answer the research questions posed. According to Fowler (2014: 61) one of the most important decisions taken by the researcher is the way in which the data will be collected. Marshall and Rossman (2006: 97) suggest that there are different data collection methods and each method has advantages and disadvantages. Fowler (2014: 61) is of the view that the data collection method is determined by the population and the availability of the respondents and facilities. Elaborating on the population, Fowler (2014: 63) notes the importance of considering the skills of the population and, in particular, whether they have computer (in the case of online questionnaires), reading and writing skills. Self-administered questionnaires, for example, would be inappropriate for a population who had limited literacy skills or were illiterate. In the present study, all respondents were literate and all had computer skills. To respond to the objective and key questions, the researcher made use of web-based online questionnaires directed at students, subject librarians and lecturers. Both open and closed questions were used. The data collection method that was used for this study was the online self-administered questionnaire made available via Survey Monkey. Survey Monkey was chosen by the researcher because of its simplicity, convenience and ease of use for the respondents. It is a DUT Library subscribed resource and the researcher sought permission from library management to use it for the research survey. Also, and as noted above, the questionnaire was the main data collection tool used in this research.

3.5.1 Questionnaires

According to Powell (1997) questionnaires are sets of questions that are submitted to a group of people in a variety of situations in order to collect information. Denscombe (2010: 156) is of the view that questionnaires are most dynamic when they are used with a large number of respondents and the information required is straightforward, to the point, and what is required by the researcher is standardised. According to Bless, Higson-Smith and Kajee (2006: 111) the questionnaire is the main data collection tool used by researchers which is flexible allowing open and closed questions. Given the above (and other advantages of the questionnaire outlined below) the questionnaire was considered a suitable data collection instrument for the present study.

3.5.1.1 Questionnaire design

It is important to have a carefully designed questionnaire that meets the objectives of the research with questions that are accurate, to the point and without prejudice. According to Babbie and Mouton (2001: 235) questions should be arranged from a general point of view and then move on to the more detailed questions. This research study was designed keeping in mind this process with questions from general to specific. Questionnaires must be such that the research objectives and key questions are met. Fowler (2014: 108) is of the opinion that the researcher must continuously revisit the questions to ensure that they are of relevance and meet the objectives of the study. The researcher adopted this stance to ensure that the questionnaire was in line with the key questions. Questionnaire completion is dependent on the enthusiasm of the respondents therefore substantial effort is necessary to make sure that the questionnaire is satisfactory ensuring a good standard (Williams 2003: 246). Self-administered questionnaires entail a lot of preparation and monitoring in order to receive a good response rate (Fink 2017: 72). As pointed out above, the response rate received from the questionnaire ranged from adequate (students) to excellent (subject librarians and lecturers).

3.5.1.2 Pre-testing the questionnaires

A pre-test or a pilot-test is a “try out” of the questionnaire. Ornstein (2013) is of the view that it is crucial to pre-test the survey before administering the survey. According to Fink (2017: 8) pretesting quickly reveals whether people understand the directions that were provided and whether the survey can be answered and enables the researcher to identify items from the

questionnaire that might not be understood and whether there are any ambiguous or missing questions. Pretesting also reveals how much time the survey takes to be completed (Fowler 2014: 108). Pretesting the survey helps to make the survey runs smoothly and improves the standard of the questionnaire before it is used in the survey (Blair, Czaja and Blair 2014: 277).

In this study, pre-tests were carried out using one subject librarian, one lecturer and eight students. The students were in their second year of study and all had undergone information literacy training. Both the subject librarian and the lecturer had expertise in information literacy. Respondents were asked prior to completing the questionnaires to note any difficulties encountered. Respondents were allocated 30 minutes and in fact most respondents completed the survey before the stipulated time. Some respondents completed the survey in 15 minutes.

Question 17 in the questionnaire for students (see Appendix A) mentioned the word “integration”. During the pre-test, the respondents were not sure of the word integration even though the word was used many times during their information literacy classes. This, however, gave the researcher a chance to explain the word in the questionnaire itself to ensure that respondents understood the term. This was in line with Fowler’s (2014: 106) suggestion that questions must always be clarified before administering them to the respondents. The term “resources” in Question 27 (see Appendix A) of the questionnaire for students also required clarification and this was corrected by the researcher by rephrasing the question. No further problems were experienced by the students.

Neither the subject librarian nor the lecturer experienced any difficulties in completing their respective questionnaires and thus no changes were made to the instruments. The pretesting was therefore regarded as a successful initiative by the researcher.

Williams (2003: 245) asserts that similar to other science disciplines, the validity and reliability of the measurement tool which is the questionnaire in this case, has to be tested thoroughly to make sure that all the data that is collected from respondents is of value. Williams (2003: 246) postulates that earlier studies have shown that people are more trustworthy and likely to respond to relevant and important questions so it is therefore crucial to test questions vigorously.

3.5.1.3 Administration of the questionnaires

The respondents in the online survey questionnaire consisted of three groups. They were first year students from the Departments of Management, Marketing, Retail and Public Relations. They received the integrated information literacy training in 2015; lecturers from the same departments who were involved in the information literacy interventions and subject librarians who administered the training. The students were in their second year of study when they were requested by the researcher to complete the survey. The population of 327 attended the information literacy classes. Students completed the survey in the library venues, using library computers, in the presence of the researcher. Bringing the students to the library venues to answer the questionnaire was not a difficult task. Lecturers were notified of the survey and all students who attended the information literacy classes were asked to go to the library to answer the online questionnaire. They were split up into smaller groups and answered the questionnaire, as mentioned, in the library and in the presence of the researcher. While the researcher was present, no assistance was asked for by the students. The six subject librarians and ten lecturers were sent via email the online web link to complete the survey.

3.5.1.4 Self-administered questionnaire

Bless, Higson-Smith and Kajee (2006: 117) state that self-administered questionnaires are completed by respondents without assistance from the researcher. The researcher chose to use the self-administered questionnaire survey for various reasons. Firstly, it affords respondents time to think before answering (Powell: 1997) and secondly, according to Bless, Higson-Smith and Kajee (2006: 112) self-administered questionnaires assure anonymity which encourages respondents to be honest and straight forward. Thirdly, they have less limitations and a higher completion rate which makes the survey quicker to and easier to fill out (Babbie and Mouton 2001: 259).

A decision was made to make the self-administered questionnaire available on-line. There were a number of reasons for this decision. Wright (2005) points out that self-administered online questionnaires are more efficient, require less time, are less expensive (no printing costs) and eliminate bias (Wright 2005). In addition, with online questionnaires, information is obtained immediately or in real time. The method makes it easy to send reminders to respondents and the processing of data is simple as the respondents' responses can be downloaded automatically to a database (Fink 2017: 17). Finally, online questionnaires (as their description suggests) are accessed and completed online by using an Internet-enabled

device. In the present study, student respondents made use of the DUT library Internet facilities whilst the lecturers and subject librarians used the Internet facilities directly in their offices.

Self-administered questionnaires are not without their disadvantages. According to Bless, Higson-Smith and Kajee (1995: 112) levels of literacy and language used by the respondents could be an issue. To reiterate, all respondents in the study were literate and sufficiently proficient in English to read and answer questions in that language. Fink (2017: 16) mentions a problem of online questionnaires specifically, namely, that respondents need to have reliable Internet access and email addresses. Again, this was not a problem in the present study as all the respondents made use of the DUT facilities. A second disadvantage is the amount of time which may be needed by the researcher to learn how to use the service, making the online questionnaire available (as mentioned Survey Monkey). This was indeed the case in the present study where the researcher had to spend much time familiarising herself with the service which was time-consuming.

3.5.2 Format of questions

Questions in questionnaires are categorised as either open-ended or closed-ended. There were various questions for the students, lecturers and subject librarians in the survey. As indicated in Table A2, there were 68 questions in total, with 47 open-ended questions and 21 closed-ended questions. The list of questions are found in Appendices A to C.

Table A2: Number of survey questions

	Open ended questions	Closed ended questions	Total number of questions
Students	20	9	29
Lecturers	15	6	21
Subject librarians	12	6	18
Total	47	21	68

The two types of questions are elaborated on below.

3.5.2.1 Open - ended questions

Open-ended questions, as their name suggests, require respondents to answer in their own words. The advantages of open-ended questions include respondents being given the chance to answer questions more freely and being given the space to express themselves in their own words (Denscombe 2010: 165). Another advantage of open-ended questions is when the researcher does not know enough about an area being researched and wants to find out more. Finally, open-ended questions allow the researcher to obtain answers that were not anticipated (Denscombe 2010: 165). In this study, open-ended questions were used in the areas where the researcher required more information and the respondents were prompted to reciprocate.

Disadvantages of open-ended questions include the fact that they demand more effort from the respondents to answer and can be time-consuming to complete. Both reasons can reduce respondents' willingness to participate in the research study or to answer a specific question (Denscombe 2010: 166). From the perspective of the researcher Fink (2017: 40) points to such questions being difficult to interpret and analyse.

3.5.2.2 Closed questions

Closed-ended questions ask the respondents to select answers from a pre-determined list of answers provided by the researcher. The advantages of closed-ended questions are that they are popular and provide uniform responses and are thus easily processed (Fowler 2014: 88). They thus provide an easier way of collecting data. Fowler (2014: 88) points out that respondents are able to readily answer questions when alternatives are given instead of thinking of answers and the researcher can readily interpret the meaning of answers when alternatives are given.

The disadvantages of closed-ended questions are that they limit the respondents' answers and do not allow respondents to express themselves. As a consequence important information can easily be overlooked. This may result in the respondents becoming frustrated by not being allowed to express their views fully (Denscombe 2010: 166).

Fowler (2014: 88) and Fink (2017: 40) both suggest that it is best to have both closed and open questions in a research study. In this study, the majority of the questions in the self-administered questionnaires were closed but with a few being open. The on-line questionnaire

based survey was the main form of data collection used in the study and provided largely quantitative data.

3.5.2.3 Focus group interview

Focus group interviews are group interviews whereby the researcher receives a better understanding of how people think about an issue. According to Gorman and Clayton (1997: 143) “a focus group session is a small group discussion consisting of six to twelve people, guided by the facilitator to gain an understanding of the participants’ perceptions relevant to a particular topic.” In the case of the present study, the focus group was used as an additional source of data to complement the on-line survey, the latter being the primary method. It provided a significant qualitative dimension to the study. The main advantage of the focus group interview is that participants are able to discuss issues together (Nieuwenhuis 2007) and this group discussion facilitates the generation of what De Vos, Strydom, Fouche and Delpont, (2011: 362) refer to as rich data. In the present study, the focus group enabled the researcher to determine the participants’ perceptions and experiences with regards to the educational benefits of, and challenges experienced with, the integration of information literacy into the curriculum. The focus group interview also permits the researcher to prompt and gather detailed explanations from the participants.

The respondents for the focus group interview were students from the four departments that were part of the information literacy training. Lecturers from the departments were contacted and assisted in identifying students who could participate. Eight students that completed the online survey were identified and invited to the focus group interview which was held in the library venue where the researcher is a subject librarian.

According to Wisker (2008: 198) it is important for the researcher to create some kind of a comfortable setting whereby the respondents are encouraged to participate by sharing perceptions and experiences without being pressurised by the researcher. There may be limitations however, in that respondents may be shy about revealing certain information and may hold back. It is important for the researcher to stay in control and appear friendly and responsive while probing in a simple way giving of a sense of being very interested in their answers. De Vos *et al* (2011: 361) and King and Horrocks (2010: 25) provide insight into some questions that the researcher should ask to achieve the most relevant information. Therefore in this study, careful consideration was taken when the researcher designed the questions for the focus group interview, bearing in mind the main objective of the study. The

questions were straightforward, simple and without bias, with the researcher having to provide very little clarification (See Appendix D for a list of the questions).

3.6 Data analysis

Data analysis and interpretation are phases in the research process which involves the “breaking up” of the data into themes and patterns so that the researcher is able to understand the data and relationships “between concepts and to see whether there are patterns that can be identified to establish themes” (Mouton 2003: 108). Analysis of data entails the use of statistics and qualitative methods to describe and interpret the respondents’ answers from the surveys (Fink 2017: 135). In this study, after the data collection was completed, the researcher prepared for the analysis by examining the data that was collected.

Quantitative data analysis can be seen as the technique by which the researcher converts data to a numerical form subjecting it to statistical analysis. In this sense data analysis does not provide the answers to research questions but instead the answers are found by interpreting the data and the results (De Vos *et al* 2011: 249). The quantitative data was collected from the online survey questionnaires which were stored online before the researcher extracted them for analysis. The quantitative data were subjected to analysis by means of descriptive statistics which provide simple summaries about the sample and the responses to some or all of the questions (Fink 2017: 137). The researcher was able to make use of simple graphics analysis using pie charts and bar graphs and it was in these forms that the data is mainly presented.

For the qualitative data analysis, the data needs to be prepared by organising the document or transcribing the text from the interviews into themes (Cresswell and Clark 2011: 206). In this study, the qualitative data collected from the open questions in the online questionnaires and the focus group discussion were prepared by means of organising the data into themes (Neuman 2011: 126). There was a substantial amount of data that contributed to the research. King and Horrocks (2010: 152) stress the importance of identifying areas of the transcripts of the interviews from the focus group discussions which assists in addressing the challenges in the research. It was essential for thorough content analysis to take place especially because there was important information extracted from the open questions from the questionnaires and the focus group interview which necessitated that the transcripts were read with care and meticulously (King and Horrocks 2010: 151). Content analysis has the potential to disclose “hidden aspects” of what is being

communicated through the written text (Denscombe 2010: 282). The researcher detected themes developing after thoroughly reading through the transcripts and it was important to identify whether the themes were not too narrow and that the research did not have too little items per theme making the analysis problematic. The researcher had to ensure that the responses received were arranged into themes that made sense keeping in mind to be careful so that mistakes were not made (Fowler 2014: 132).

3.7 Reliability and validity

Denscombe (2010: 298) refers to reliability as to whether a research instrument is neutral and consistent throughout by making use of it many times. Fink (2017: 76) is in agreement that reliability in a research survey, provides a consistent measure of crucial structures in spite of contextual variations. Reliability in research means that the instruments will continually present the same results and that questions should be accurate, well-organised and without bias (Babbie and Mouton 2001: 233-236). Rosnow and Rosenthal (2013: 107) and Bless, Higson-Smith and Kagee (2006: 156) and are in agreement with Babbie and Mouton (2001: 233-236) who suggest that reliability implies consistency and stability with research results using the same group of people and has unchanging values which can be trusted to give accurate measurements repeatedly. In this study, the pretest results were similar to the main questionnaires that were administered when the results were compared. The time allocated for the questionnaire was adequate because the questions were answered in the allocated time during the pretest as well as when the main questionnaire was administered. The time allocated for the questionnaire was reviewed repeatedly in the pretest by different students to ensure reliability. Some words and phrases as well as some questions were re-examined and rephrased taking into account the suggestions that came from the pretest and this increased the reliability of the research instrument that was used.

The quantitative questions from the online questionnaires ensured reliability when the questions were made clearer from the pretesting phase. A survey is considered reliable when the relation between results is high, given that the question is repeated more than once and yields the same results (Fink 2017: 76). It can be deduced from the pretest results and the main results that the study was reliable.

Validity indicates the extent to which an instrument measures what it sets out to measure and the concept can be complex with many variations and subdivisions and measuring its extent can be very involved (Du Plooy-Cilliers *et al* 2014: 256). A survey is valid if the information it

provides is a true reflection of the respondents' attitudes, behaviour, knowledge and values" (Fink 2017: 78). There are various ways to ensure validity (Denscombe 2010: 297). In this study, as has been noted above, the instruments used were pretested on students in their second year of study who had already undergone the information literacy training as well as one subject librarian and one lecturer. In order to ensure the validity, the questions were adjusted on the basis of the responses that were received from the pre-test. The questionnaire and the focus group interview were linked closely to the research topic. To also ensure validity, the researcher always kept in mind the objective and key research questions underpinning the study when setting the questions in the questionnaire and interview schedule (King and Horrocks 2010: 25). Thus the questionnaires for the students, lecturers and librarians and the interview schedule for the focus group were structured to ensure that they provided enough information to respond to the research questions which guided the study. Given the response rate achieved, it could be deduced that these results can be generalised to first year students in other faculties but to what extent, is arguable and any generalisation to other faculties must be done with care (Denscombe 2010: 298).

3.8 Research ethics

It is crucial to consider ethical issues in the research process. According to Silverman (2013: 30) gaining ethical approval is not easy and the most obvious ethical considerations include: the right of the participants to withdraw from the research at any stage; the protection of the respondents; obtaining consent and causing no harm (Silverman 2013: 161). Most universities have research ethics committees by which all research must be approved (Silverman 2013: 161) and (Fowler 2014: 140). The researcher made applications to two universities for research approval, that is, the University of KwaZulu-Natal (where the researcher is a student) and the Durban University of Technology (where the researcher is a subject librarian and where the participants were from). The applications were supported by relevant documents required for the research study. All the ethical considerations noted above were abided by.

3.9 Summary

This chapter described and discussed the research methodology adopted for the study, research design, population and sampling, data collection, mixed method approaches and the reliability and validity of the study. The study population consisted of first year students from the Departments of Management, Marketing, Retail and Public Relations who received the information literacy integrated training, lecturers from those departments who were involved in the information literacy interventions and subject librarians who taught the lessons. The self-administered questionnaire and the focus group interview produced results that were essential and relevant to address the objectives and key questions of the study. The researcher was able to extract valuable data from the open questions in the online questionnaire as well as from those which comprised the focus group interview. The findings of the survey and the focus group interview are presented in Chapter 4 which follows.

CHAPTER 4

PRESENTATION OF FINDINGS

4.1 Introduction

This section documents the findings from the online web-based questionnaires administered on Survey Monkey which were used to survey the first year students who had completed integrated information literacy (IL) training in their first academic year in 2015 (who were in their second year of study, 2016, when they were surveyed) from the Faculty of Management Sciences in the Departments of Management, Marketing, Retail and Public Relations at the Durban University of Technology (DUT). This includes the lecturers and subject librarians involved in the integrated information literacy training.

Altogether a total of 193 online web-based questionnaires (177 from students, 10 from lecturers and 6 from subject librarians) were analysed. Owing to the volume of the pages involved, it was felt that it would not be pragmatic to include all 193 questionnaires as an Appendix in this study. The completed questionnaires have been stored in the Survey Monkey database at the Durban University of Technology - Durban campus. This section also presents the findings from the focus group interviews targeting selected students only. Minutes of this meeting have been recorded but are also not presented as an Appendix as it did not make sense to include the minutes but exclude the completed questionnaires.

In Chapter 1, under the heading “Importance of the problem”, it was pointed out that documented, verifiable evidence pointing to the positive impact of integrated information literacy has been anecdotal and there has been no formal assessment of integrated information literacy into the curricula of these Departments since its inception a few years ago. It is this “gap” that this study seeks to address. This section provides this documented evidence with verification available by means of Survey Monkey and the relevant minutes. From a total of 327 surveyed students that attended the information literacy classes, 177 students participated in the online questionnaire survey giving a response rate of 54%. Ten lecturers and six subject librarians who were involved in the information literacy programme also participated in the survey giving a response rate of 100% for each. The data collected was analysed and the findings are presented by means of graphs and tables. The findings from the content analysis of responses to the open questions and the focus group questions

are presented in a narrative form and are grouped into themes and presented by means of tables. The frequency, response counts and percentages are presented where necessary.

4.2 Presentation of findings based on students' questionnaire

As noted above, data was collected from registered second year students (2016) from the Departments of Management, Marketing, Retail and Public Relations to assess their first year (2015) integrated information literacy training. The following section presents the findings of the survey.

4.2.1 Registration of first year students at DUT

Students who attended the information literacy classes and participated in the online questionnaire were asked to indicate if they were registered students at DUT. The reason for this question is that there are sometimes late registrations taking place due to financial or other reasons but students are allowed to attend lectures in the meantime. All 177 respondents indicated that they were registered DUT students.

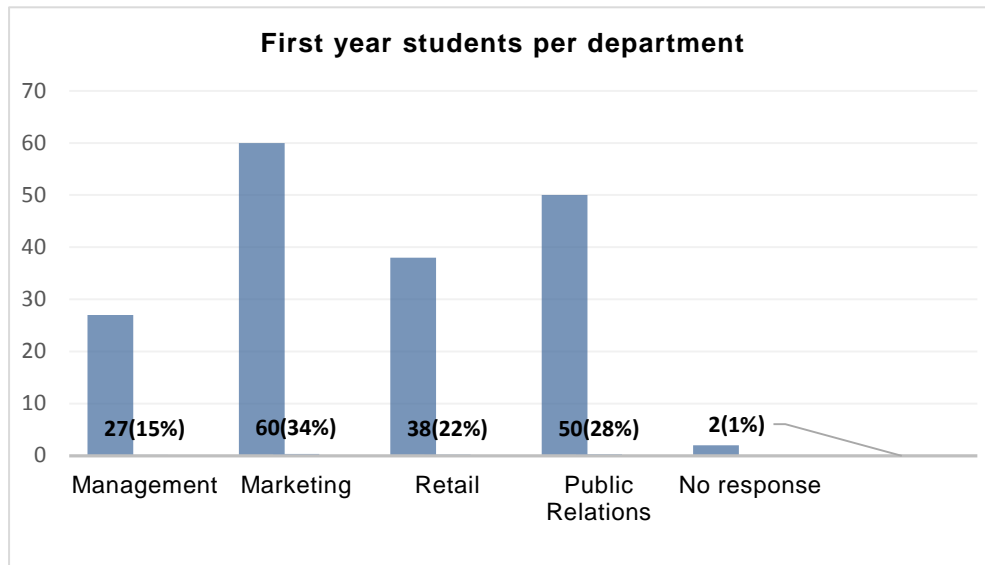
4.2.2 Registration of first year students per faculty

Respondents were asked to indicate the faculty in which they were registered. The reason for this question was because sometimes students register and de-register and are in the "waiting process" of registration and in the meantime they are allowed to attend lectures. All 177 students indicated that they were registered in the Faculty of Management Sciences.

4.2.3 Registration of first year students per department

Respondents were asked to indicate the Department in which they were registered in. From the 177 respondents, 175 answered this question and two did not respond. As can be seen from Figure 1, the department with the most number of students was the Marketing Department with 60 (34%) students and the department with the least number of students was Management with 27(15%) students.

Figure 1: First year students per department (N=177)



4.2.4 Race and gender profile of respondents

Respondents were asked to indicate their race and gender. Figures 2 and 3 list the respondents by race and gender, respectively. With respect to Figure 2, out of the 177 respondents, 175 answered this question while two did not respond to the question. Of the 175 respondents, 151 (86%) were African, 19 (11%) were Indian, four (2%) were Coloured and one (0.57%) was White. No respondents were part of the “Other” race group.

Figure 2: Race profile (N=177)

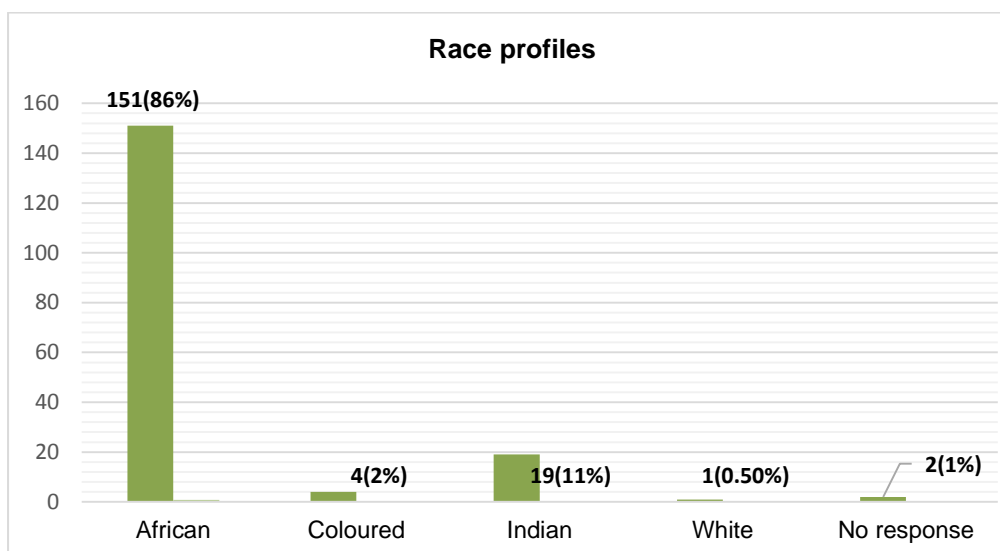


Figure 3: Gender profile (N=177)

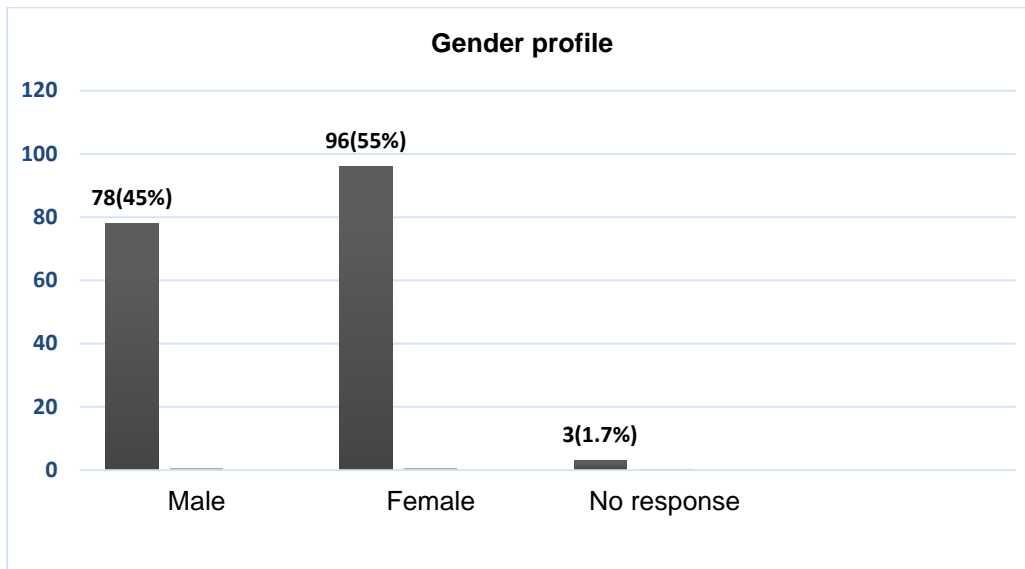
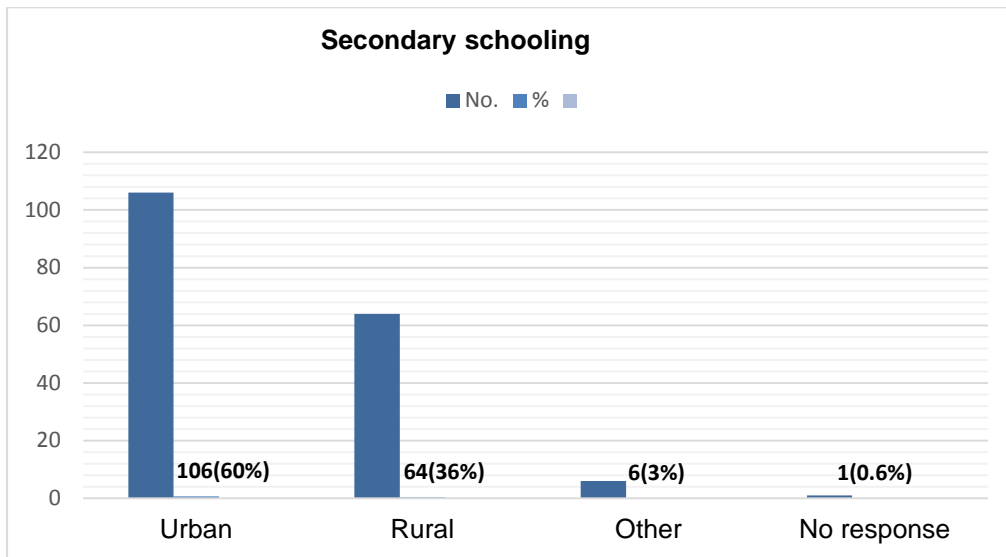


Figure 3 gives an indication of the respondents by gender. Of the 177 respondents, 174 respondents answered this question while three did not respond to the question. Of the 174 respondents, 78 (45%) were male and 96 (55%) were female. This suggests that there were more female students present in the information literacy classes and the female students outnumbered the male students.

4.2.5 Secondary schooling

Respondents were asked to identify the type of area that they attended high school in, such as urban or rural. Figure 4 captures the type of secondary schools attended by respondents. The results show that 106 respondents (60%) came from urban schools while 64 (36%) came from rural schools. The “Other” option gave respondents a chance to fill in an option if they were not sure whether their schools were in rural or urban areas. Six respondents who chose the “Other” option indicated that they came from small towns. One respondent did not respond to the question. Figure 4 indicates that the information literacy classes that were conducted at DUT comprised of a vast majority of students from urban schools while a small percentage of students came from rural schools.

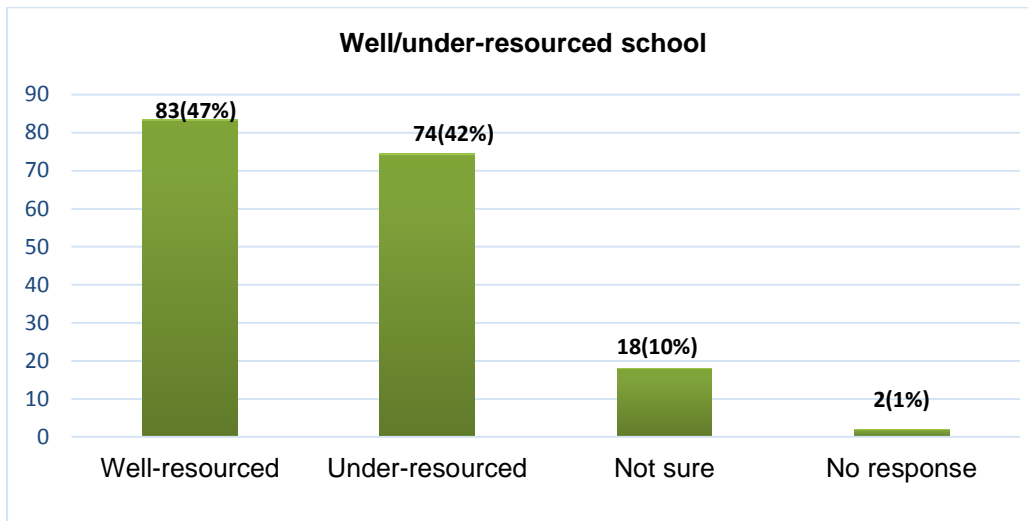
Figure 4: Secondary schooling (N=177)



4.2.6 Well-resourced / under-resourced secondary schools

Respondents were asked to identify whether the schools that they attended were well-resourced or under-resourced. Out of the 177 students who took the survey, 83 (47%) indicated that the schools that they attended were well resourced while 74 (42%) believed that their schools were under-resourced and 18 (10%) respondents were not sure. Two respondents did not respond to the question. This is an indication that the information literacy classes that were conducted at DUT comprised of both students from well-resourced schools and students from under-resourced schools which impacts on the digital divide experienced in the IL classroom which in turn poses a challenge in terms of teaching all students at the same pace. Students from well-resourced schools would have been better equipped to follow what was being taught than those students from under-resourced schools.

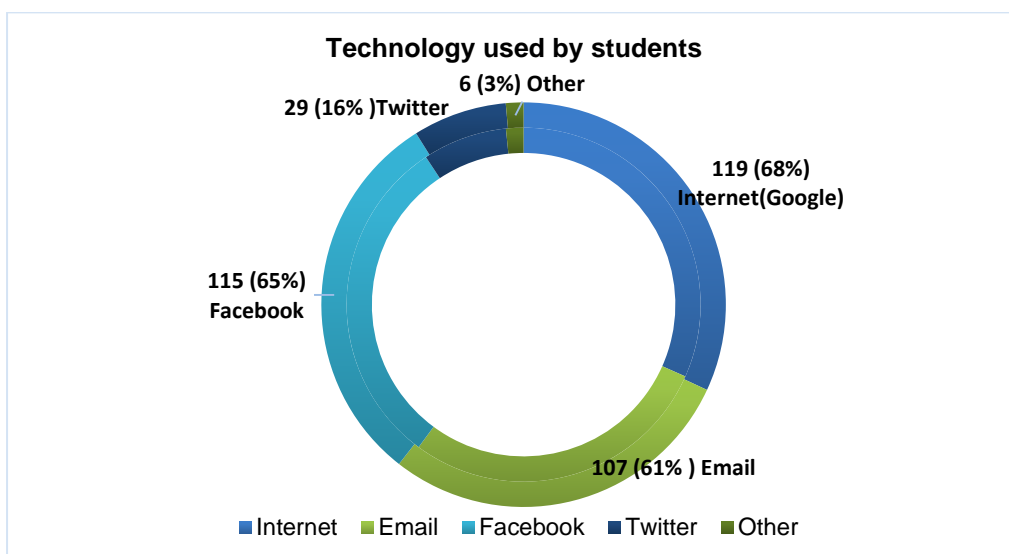
Figure 5: Well-resourced / under-resourced school (N=177)



4.2.7 Technology used by first year students

Respondents were asked which information and communication technologies (ICTs) they used and 119 (68%) students indicated that they used the Internet (Google) while 115 (65%) indicated that they used Facebook. Figure 6 indicates that of the different technologies used, the Internet (Google) was the most popular followed by Facebook. Twitter was used the least while six students chose the “Other” option indicating that they used Whatsapp, Instagram, YouTube and/or BBM. It can be deduced that students are not making use of all the social networking tools that are available, while others make use of multiple technologies.

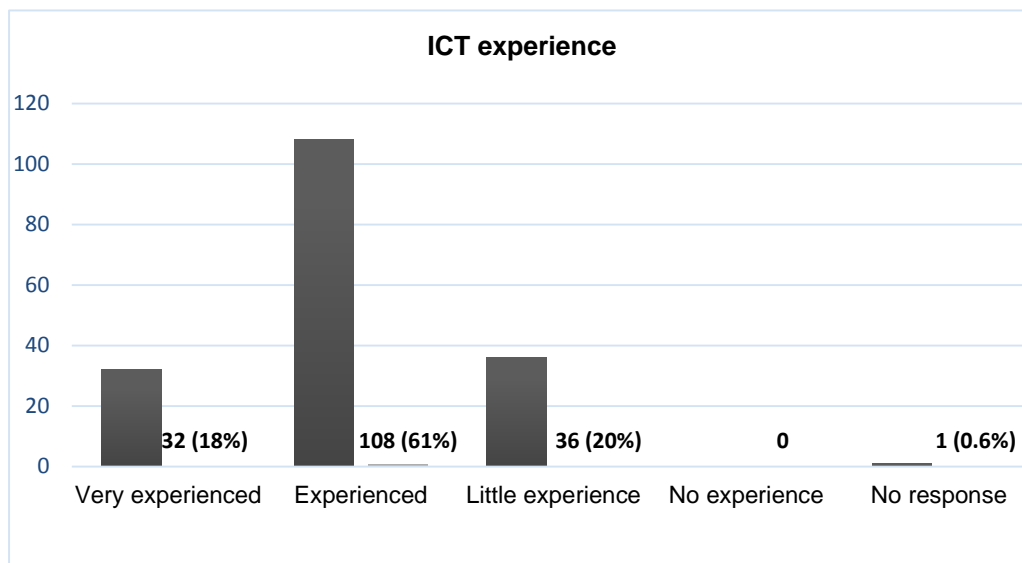
Figure 6: Technology used by first year students (N=177)



4.2.8 ICT experience

Respondents were asked to indicate their level of experience with information and communication technologies (ICTs), for example, email, internet and the library computer systems that is, Summon and iLink. Figure 7 indicates that a large majority of students, 140 (79%) indicated that they were either experienced or very experienced and 36 (20%) indicated that they had little experience. One respondent did not respond to the question. These results suggest that the majority of students would have been comfortable enough to follow what was being taught in the information literacy classes while 20% of them would have required extra assistance because of little experience and they would thus have been at a disadvantage both in terms of using ICTs and in finding information for their assignments.

Figure 7: ICT experience (N=177)



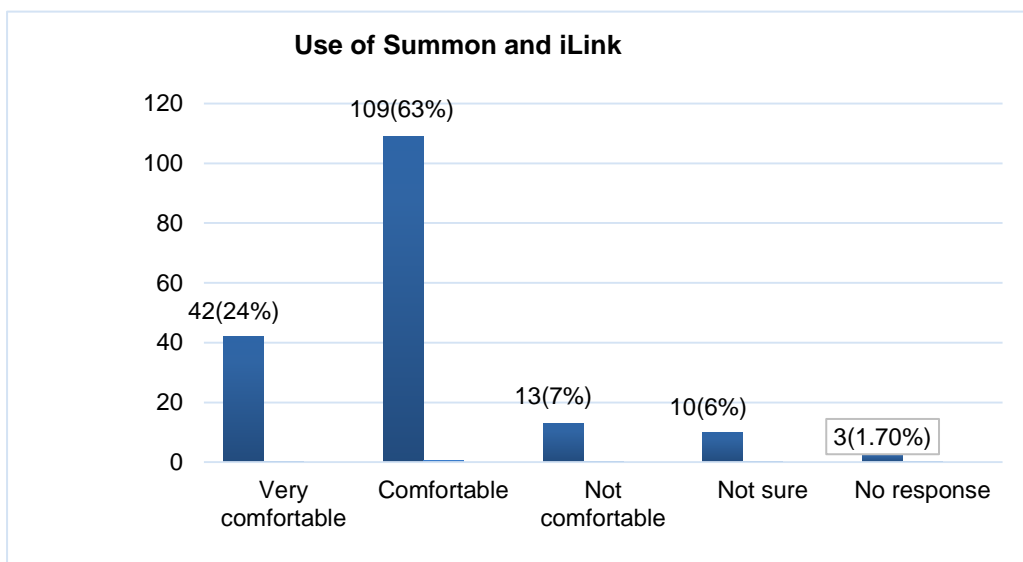
4.2.9 Use of new technology (iLink and Summon)

Respondents were asked to indicate whether they felt comfortable using the library computer system, that is, iLink and Summon. The graph below indicates that the majority of the students felt comfortable using the library technology which would have made teaching information literacy less of a challenge. It must be noted however, that there was a small percentage (7%) of students who were not comfortable with using the library technology and 6% were not sure. Three respondents did not answer the question. These students would

have needed extra assistance during the information literacy classes and this would have slowed down the teaching in the class.

In relation to Figure 7, the question relating to the level of ICT experience, it is interesting to note that approximately the same percentage of students who indicated that they were “Very experienced” and “Experienced” also indicated in this question that they were “Very comfortable” and “Comfortable” using new technology (see Figure 8). This implies that respondents who have the same level of ICT experience have the same sense of confidence using new technology.

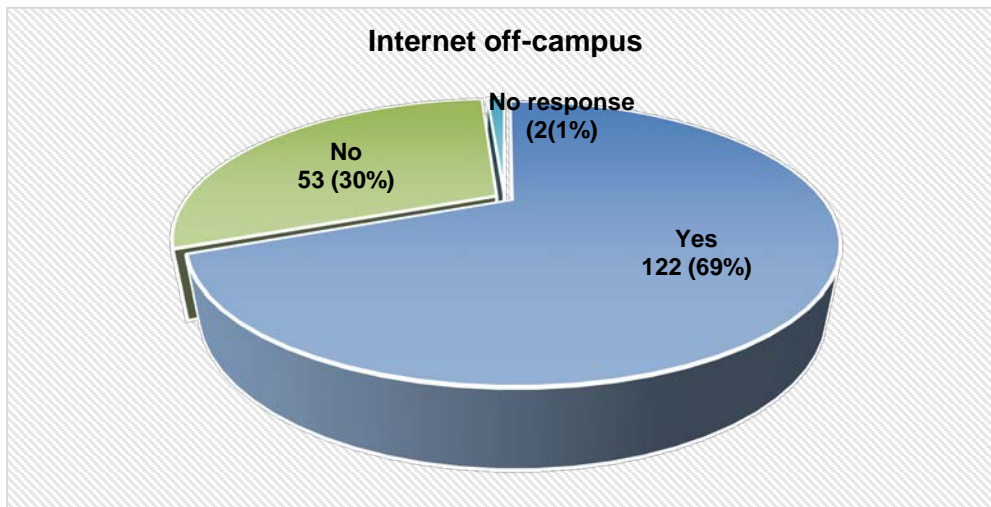
Figure 8: Use of iLink and Summon (N=177)



4.2.10 Internet access from off campus

Respondents were asked to indicate whether they had access to the Internet outside of campus (DUT). Figure 9 indicates that 122 (70%) of respondents have access to the Internet outside of campus while 53 (30%) do not have access. Two respondents did not respond to the question. The high percentage of students having access to the Internet off campus would have minimised problems of pace in the information literacy classes. Making use of the computers in the library during the classes would have not been as challenging as it may have been with the 30% who did not have access off campus.

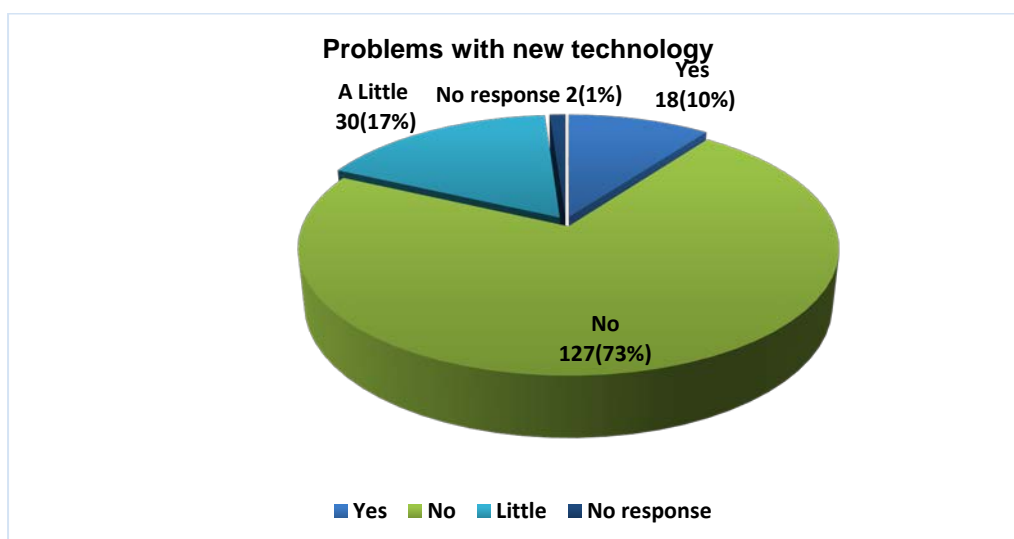
Figure 9: Internet access off-campus (N=177)



4.2.11 Problems with technology used

Respondents were asked whether they felt disadvantaged and experienced problems with the technologies that were used when they began the information literacy classes. Of the 177 students, 175 responded to this question and two did not respond to the question. From the results in Figure 10, it can be presumed that the majority of students (73%) were familiar with the tools used in the information literacy classes and they would have been comfortable enough to find information for their assignments once they were taught this in class. The 17% who felt a little disadvantaged and the 10% who indicated that they felt disadvantaged would have needed a lot more assistance to find information by making use of the tools available in the library.

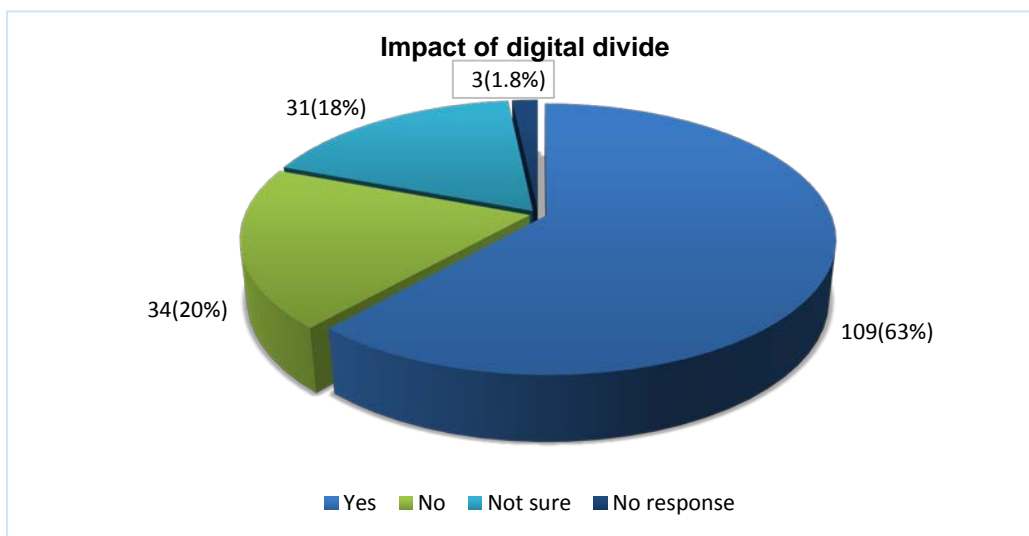
Figure 10: Problems with new technology (N=177)



4.2.12 Impact of digital divide on IL training

Respondents were asked to indicate whether the digital divide, that is, the lack of access for some people to ICTs (Internet, Facebook and other social networking applications) has an impact on information literacy training at DUT. Out of the 177 respondents, 109 (63%) indicated that it does have an impact while 34 (20%) felt that it did not. Thirty one (18%) respondents were not sure and three respondents did not respond to the question. See Figure 11.

Figure 11: Impact of digital divide (N=177)

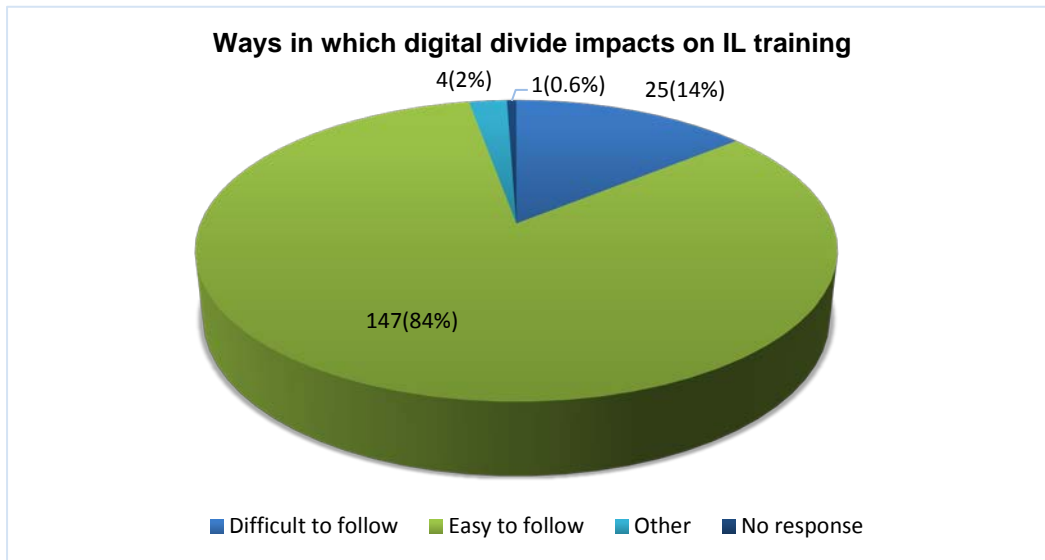


4.2.13 Ways in which the digital divide impacts on IL training

Respondents were asked to describe the ways in which the digital divide impacted on the information literacy training in relation to the previous question. Figure 12 shows that 147 (84%) respondents indicated that it has been easy to follow the information literacy training and 25 (14%) indicated that they found it difficult to use the keyboard, mouse and other applications. Four (2%) students chose the "Other" option. These students indicated that they were unable to follow the lessons and that they had to wait for basic computer training which wasted a lot of time for them. One respondent skipped the question. The fact that 14% of students indicated that they found it difficult to use the keyboard and mouse as well as other applications is an indication that they did not have enough skills to use a computer which is an important factor in the information literacy class considering

that most of the information literacy training is done online. This implies that these students would have found it difficult to follow the online information literacy lessons.

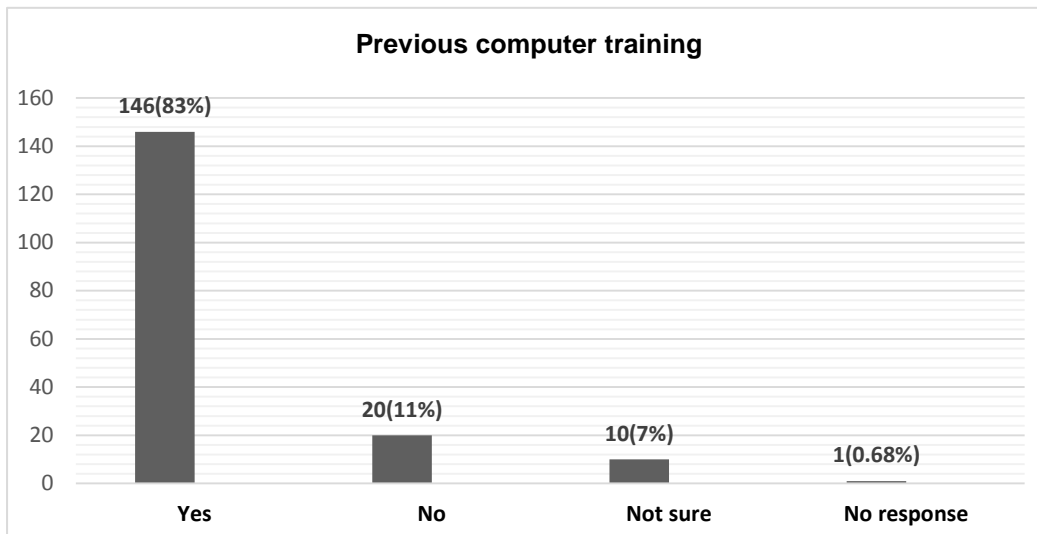
Figure 12: Ways in which the digital divide impacts on IL training (N=177)



4.2.14 Computer training before attending IL training

Respondents were asked to indicate whether students should have previous computer training before attending the information literacy classes. As reflected in Figure 13, of the 177 respondents, 176 answered the question and 146 (83%) agreed that students should have previous computer training before attending the information literacy classes. Twenty (11%) of the respondents indicated that previous computer training was not necessary before the start of the information literacy classes and 10 (7%) were uncertain whether previous computer training was necessary or not. Given these and the results to the previous question above it is evident that students without previous computer training slow down the teaching in the information literacy class, resulting in wasted time.

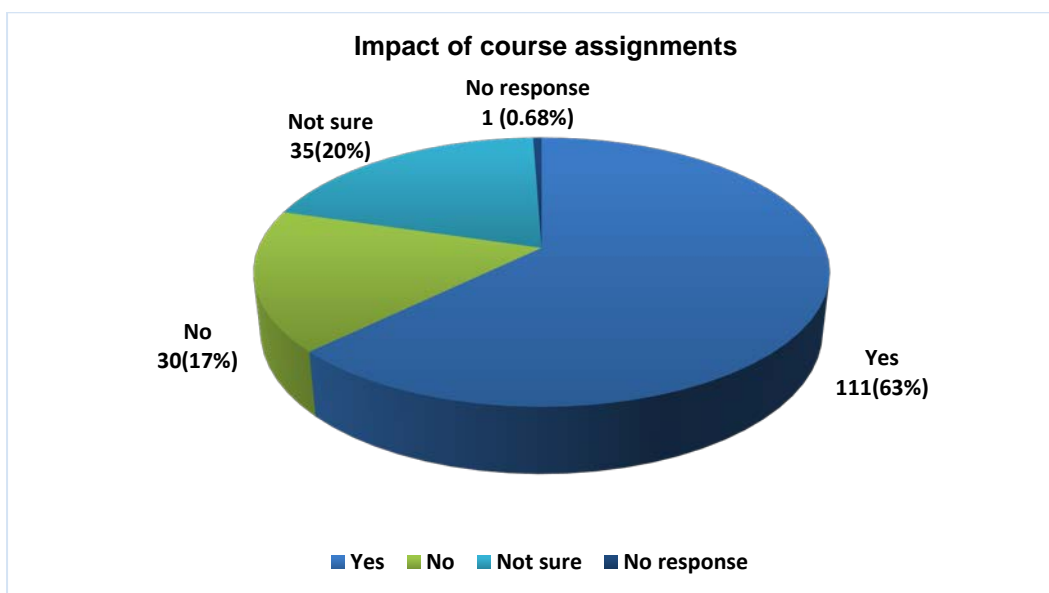
Figure 13: Previous computer training (N=177)



4.2.15 Impact of course assignments (IL integration) on students' learning

Respondents were asked to indicate whether the integration of information literacy, that is, by the subject librarian making use of course assignments while teaching, made a positive impact on students' learning. Of the 177 respondents, 176 answered the question and 111 (63%) agreed that the integration of information literacy made a positive difference to students' learning while 30 (17%) respondents indicated that it did not. Thirty five (20%) respondents indicated that they were "Not sure". The results are reflected in Figure 1.

Figure 14: Impact of course assignments on students' learning (N=177)



Respondents who agreed that the integration of information literacy made a positive impact on students' learning were asked to explain why they agreed and the explanations provided are given in the table below. Seventy one of the 111 respondents agreed that the integration of information literacy (use of course assignments) made a positive impact on students' learning and provided explanations. The rest provided no explanations. The explanation with the highest frequency was that information literacy has helped many students to be able to structure and reference assignments and they received higher marks for being able to structure the assignments properly and punctually.

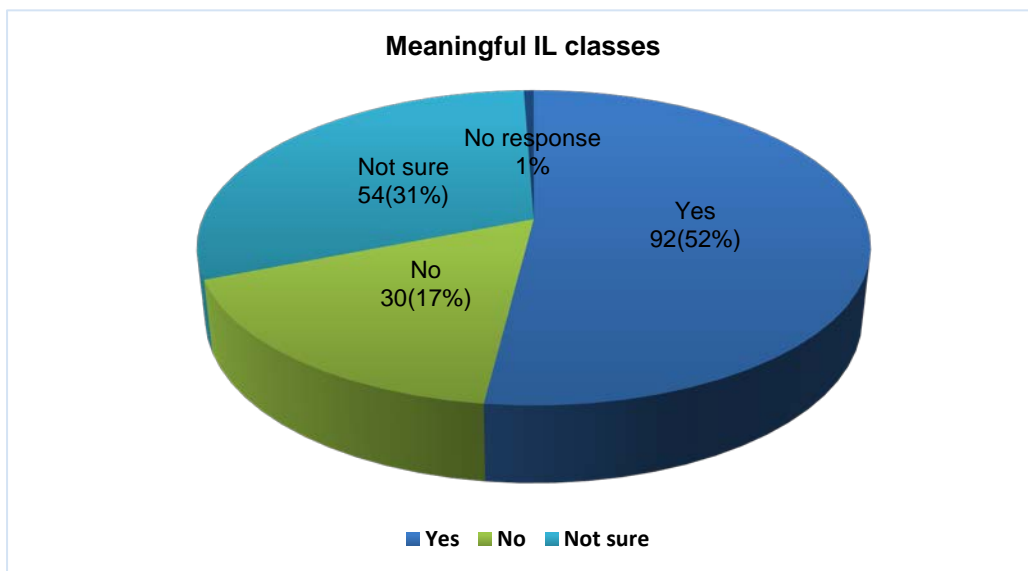
Table 1: Explanations why course assignments impact on students' learning (N=111)

Explanations	Response count	Response Percentage
Students were helped in finding out how to structure and reference assignments and they got higher marks for being able to do the assignments properly and punctually	11	15%
Students received more knowledge about what the assignment was about and integration made it much easier to understand the course and provide proper guidelines on the assignment	10	14%
Students found it easier to search for information for assignments because the subject librarian used the assignments during class to help find information	9	13%
With integration, the librarian focused on where help was needed the most	9	13%
Students learnt how to reference assignments because of the assistance received	6	8%
Students who have never used computers or the internet before found the integrated training meaningful because assignments were used and they received more explanations in what had to be done	5	7%
Students have seen positive results in their studies	4	6%
Students are able to apply what was learnt in class to assignments and projects	4	6%
Students found it easier to access information from the internet and reference assignments	3	4%
Students who have never used computers or accessed the internet before were helped by attending these classes	3	4%
Students were guided on how to reference and find information from the library	3	4%
Students have become more computer literate	2	3%
The classes allowed teaching to be practical and theoretical for a better understanding and learning experience	2	33%
Total providing explanations	71	64%
Did not give explanations	40	36%

4.2.16 Coursework integrated assignments – meaningful IL classes

Respondents were asked to indicate whether the use of integrated assignments in the classroom was a good idea, that is, by the subject librarian making use of them, did it make the classes more meaningful? As reflected in Figure 15 below, of the 177 respondents, 176 answered the question and 92 (52%) indicated that it was a good idea to use the integrated course assignments in that the classes were more meaningful as a result of using them. Thirty respondents (17%) indicated that using the course assignments did not make the classes more meaningful and 54 (31%) were not sure whether the use of the integrated assignments made the classes more meaningful or not.

Figure 15: Coursework assignments and meaningful IL classes (N=177)



Respondents who agreed that the use of the integrated assignments in the information literacy class was a good idea, were asked to explain why they agreed. Of the 92 respondents who said yes to more meaningful information literacy classes, 55 respondents gave one or more explanations. Table 2 provides the findings.

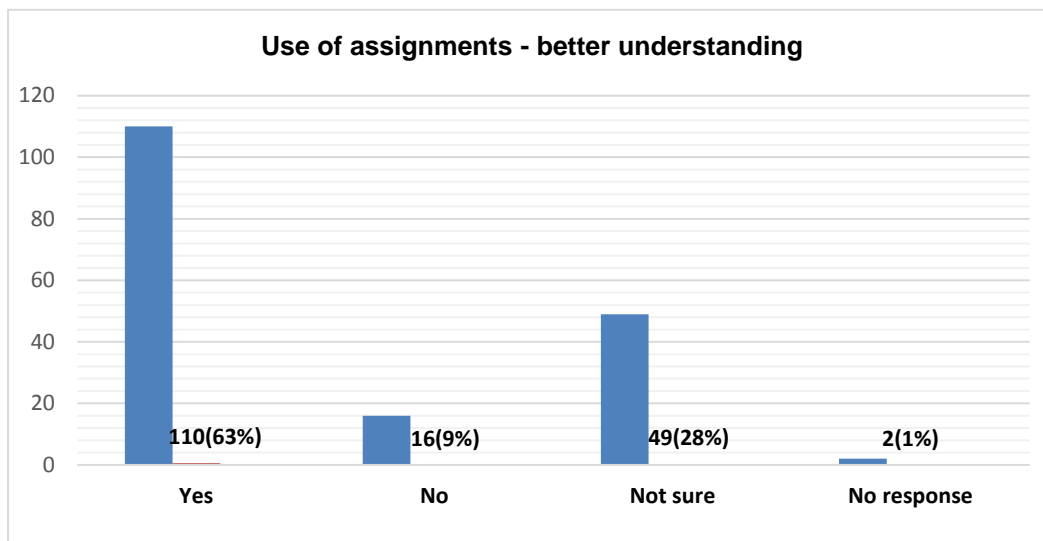
Table 2: Explanations for assignments making IL classes more meaningful (N=92)

Explanations	Response count	Response percentage
Gained more information for assignments and could search for and find relevant information	19	35%
More engagement with students and the subject librarian provided more direction with the assignments	13	24%
Better able to reference assignments after IL classes since it relates to assignment topic	13	24%
Understood assignments better because of practical hands on classes and the integration made the assignments more meaningful	10	18%
Total providing explanations	55	60%
Did not provide explanations	37	40%

4.2.17 Use of assignments in IL class – better understanding of what was being taught

Respondents were asked whether assignments or projects were used during the information literacy class. If so, did this help them understand what was being taught better, did they think that this had helped a great deal? They were asked to elaborate further on the use of assignments or projects in the information literacy class and whether they felt that this helped them to understand better, what was being taught. Out of 177 respondents, a significant 110 (63%) said that the use of assignments or projects helped them to better understand what was being taught. Sixteen (9%) respondents answered negatively and 49 (28%) were not sure. Two respondents did not answer. It is interesting to note that the results reflected in Figure 16 correlate to the previous question regarding the meaningfulness of assignments in the information literacy class.

Figure 16: Use of assignments in IL class – better understanding of what was being taught



Respondents who agreed that they had a better understanding were asked to explain how the use of assignments or projects were of help. Of the 110 who indicated “Yes”, 67 respondents provided explanations that are reflected in Table 3.

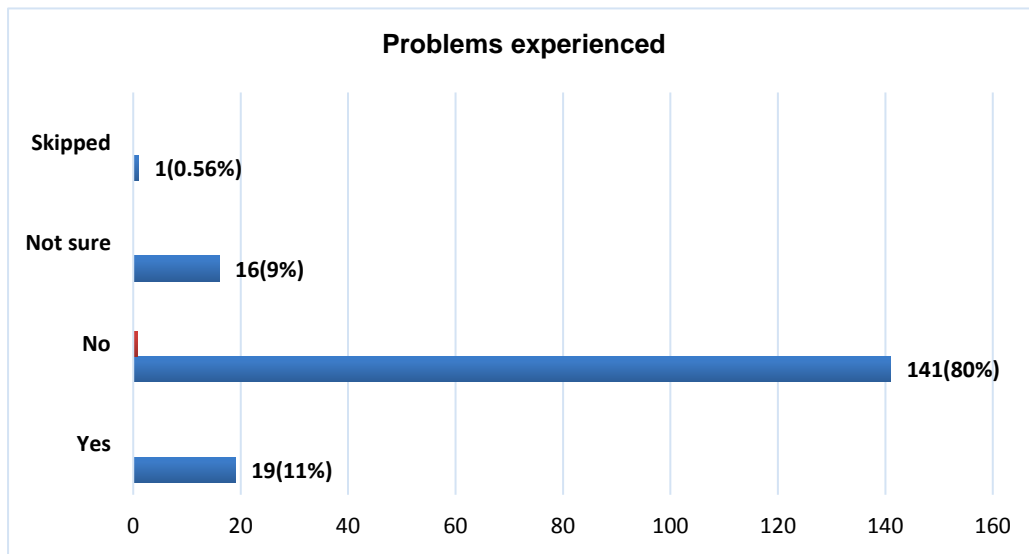
Table 3: How were the use of assignments in IL class of help (N=110)

Explanations	Response count	Percentage count
Helped to understand assignments better and encouraged to remain focused	17	25%
Helped to improve the quality of work done through putting what is taught into practice	14	21%
Helped to be more confident in finding information and students feel more comfortable in understanding assignments since they can get help from the librarian	13	19%
Helped to increase pass rate for assignments and tests	12	18%
Helped to find the right books and how to reference them	11	16%
Total providing explanations	67	61%
Did not provide explanations	43	39%

4.2.18 Problems experienced in terms of what was being taught in general

Respondents were asked to indicate whether there were problems experienced in the information literacy class in terms of what was being taught in general. Of the 177 respondents, 141 (80%) indicated that they did not experience any problems with what was being taught in general in the information literacy class. Nineteen (10%) indicated that they experienced problems and 16 (9%) indicated that they were not sure if there were problems. One respondent did not respond to the question. From the results, it can be deduced that vast majority of students were comfortable with what was being taught in general. Figure 17 depicts the results.

Figure 17: Problems experienced in terms of what was being taught in general (N=177)



The 19 respondents who experienced problems were asked to explain their answer. Only 12 respondents provided explanations. Table 4 below provides the explanations given by the respondents.

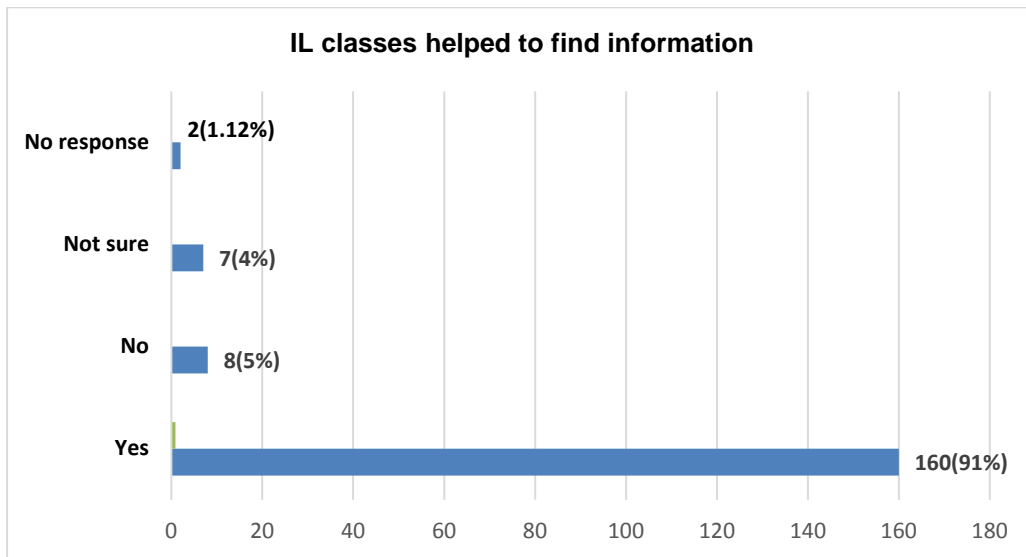
Table 4: Problems experienced (N=19)

Problems	Response count	Response percentage
Everything that is taught is new and not familiar	4	33%
It was difficult to use the computer	3	25%
The lecturer was too fast	1	8%
Many students are from rural areas and come from less resourced schools	2	8%
Computers do not work and makes it difficult to follow the lecturer	2	11%
Total providing explanations	12	63%
Did not provide explanations	7	37%

4.2.19 IL classes and assignments

Respondents were asked whether by attending the information literacy classes, they were better able to find information for their assignments, that is, were they able to find books and/or journals for their assignments. Out of 177 respondents, 160 (91%) agreed that they were better able to find information while 8 (5%) disagreed and 7 (4%) were not sure. There were two respondents who did not respond to the question.

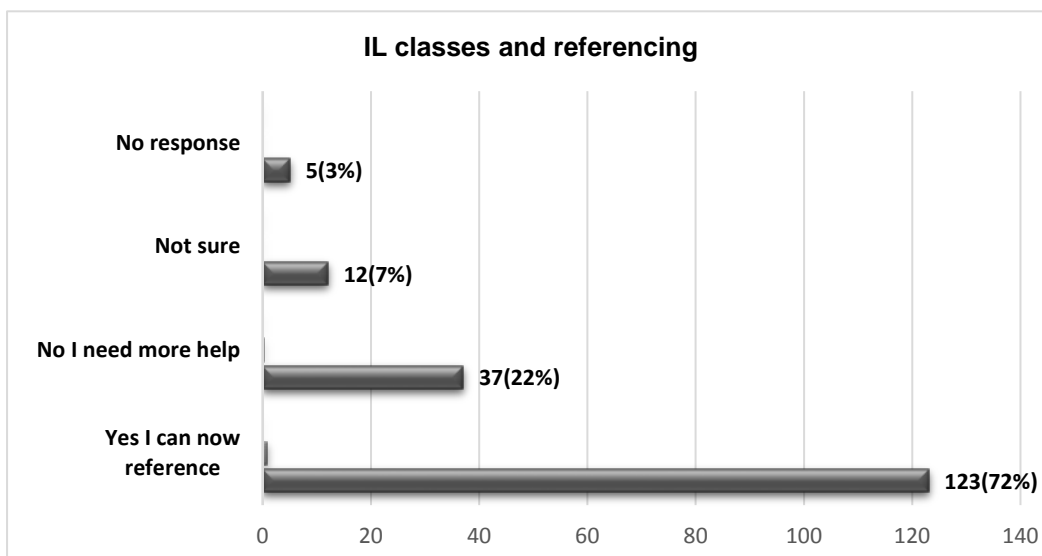
Figure 18: IL classes helped to find information for assignments (N=177)



4.2.20 IL classes and referencing

Respondents were asked whether by attending the information literacy classes, they were able to reference their assignments better than previously. Out of 177 respondents, 123 (72%) answered that they could reference better. Thirty seven (22%) indicated that they needed more assistance with referencing and 12 (7%) were not sure. Five respondents did not respond to the question.

Figure 19: IL classes and referencing (N=177)



Respondents were asked to provide explanations for their answers. From the 172 respondents who answered the question, 62 respondents provided answers and 110 respondents did not provide answers. The table below provides an indication of the results.

Table 5: IL classes and referencing (N=172)

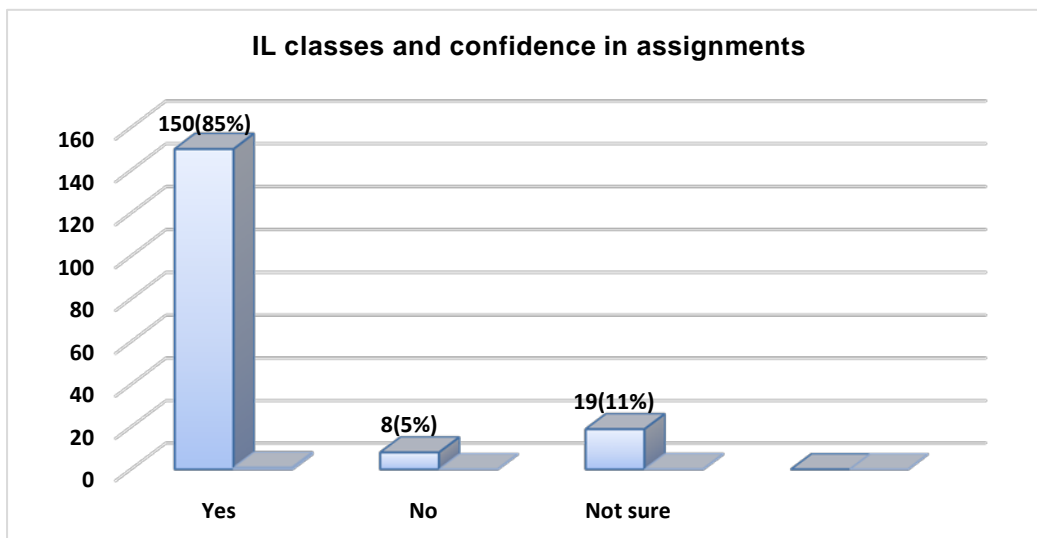
Responses	Explanations	Response count	Response percentage
Yes, I can now reference better than before	Can reference better, was taught well	9	15%
	Scored marks for referencing to enhance overall marks for assignment	8	13%
	Did not know how to reference until attended IL classes	7	11%
	Can now reference assignments with very little or no mistakes - those classes helped a lot	7	11%
	Learnt not to plagiarise	6	10%
	Need more help	5	8%
	Did not know how to reference before but eventually taught to by the lecturer	4	6%
	Learnt different types of referencing	3	5%
	Was not exposed to the Harvard method of referencing before but after attending the library literacy classes it became easy	3	5%
	Can now reference without assistance	2	3%
	Never knew about in text referencing but now know	2	3%
No, I need more help	Did not attend all the classes because of workload of other lectures	2	3%
	Need more help	2	3%
Not sure	Not sure sometimes if referencing is correct	2	3%
Total		62	36%
Did not respond		110	64%

As can be seen in Table 5, the highest response count was nine (15%) with students indicating that they can reference better and were taught well.

4.2.21 IL classes and confidence in doing assignments

Respondents were asked whether by attending the information literacy classes, they felt more confident in doing their assignments. Out of 177 respondents, 150 (85%) indicated that they felt more confident in doing their assignments and eight (5%) indicated that they were not confident while 19 (11%) were not sure. From the results, it can therefore be deduced that a substantial number of students benefited from the information literacy classes and felt confident in doing their assignments. A small number of students (5%) still need help with assignments. Data is reflected in Figure 20.

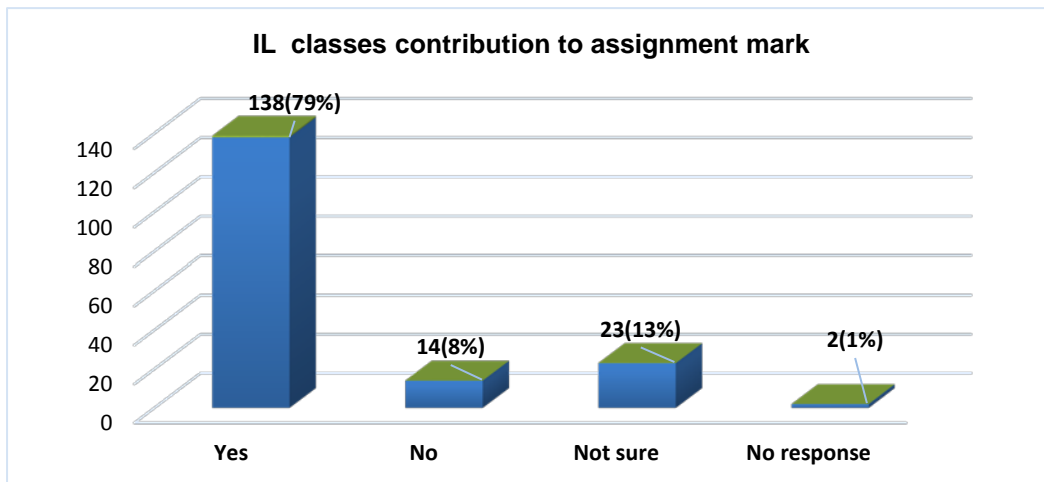
Figure 20: IL classes and confidence in doing assignments (N=177)



4.2.22 IL integrated classes and contribution to assignment mark

Respondents were given an integrated credit bearing assignment to work with the subject librarian in the information literacy class. This assignment contributed to the students' course mark. Respondents were asked whether they felt that the information literacy classes contributed positively towards this assignment's mark. Out of 177 respondents, 138 (79%) indicated that the information literacy classes contributed positively towards this assignment mark while 14 (8%) indicated that the information literacy classes did not do so and 23 (13%) were not sure. Two respondents did not respond to the question. Figure 21 graphs the responses.

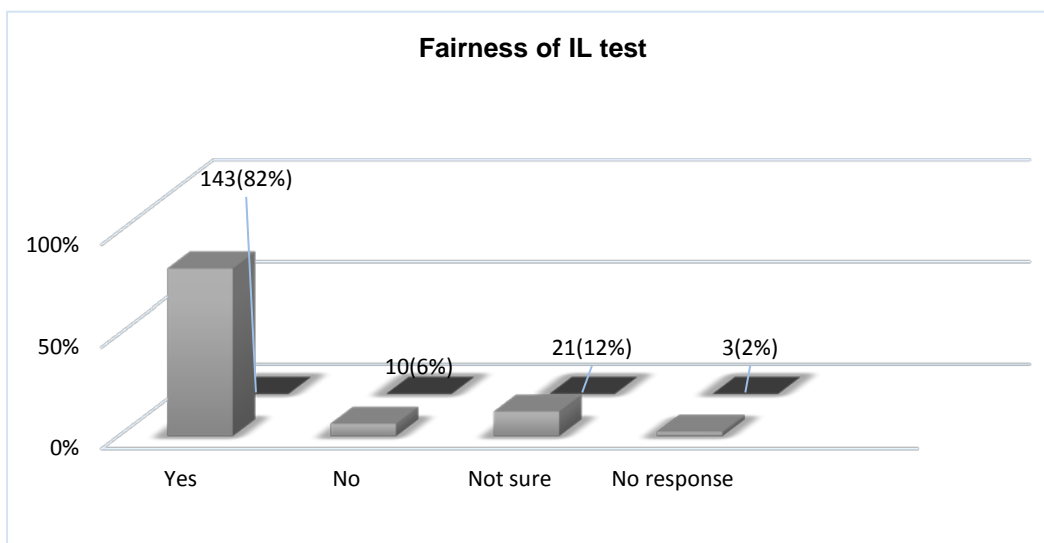
Figure 21: IL integrated classes and assignment assessment (N=177)



4.2.23 Fairness of IL test

Respondents were given a test at the end of the information literacy classes. This test contributed towards the course mark. Respondents were asked whether the information literacy test was fair. Of the 177 respondents, a large majority 143 (82%) indicated that the test was fair while 10 (6%) indicated that it was not. Twenty one (12%) indicated that they were not sure whether the test was fair or not. Three respondents did not respond to the question.

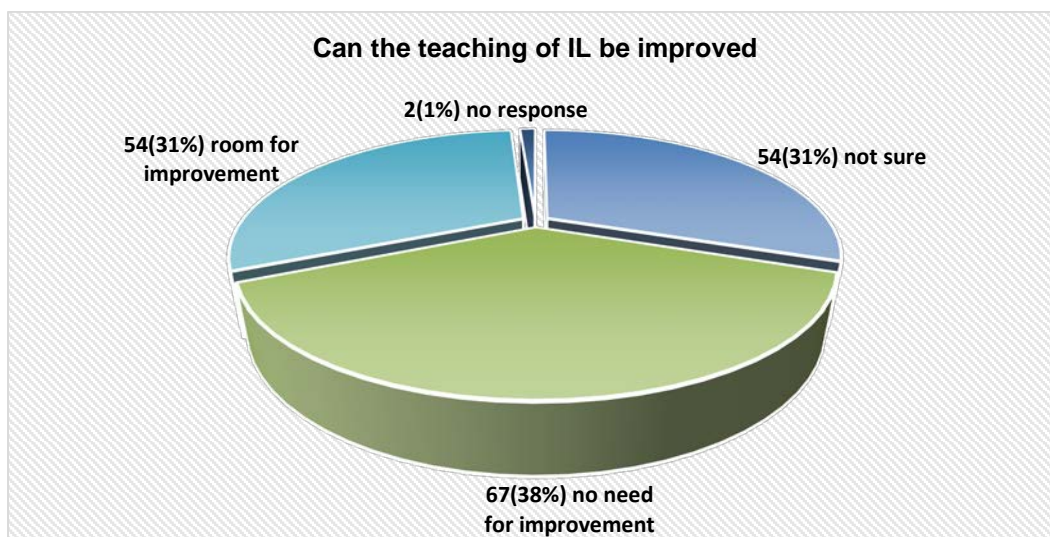
Figure 22: Fairness of IL test (N=177)



4.2.24 Can the teaching of IL be improved?

Respondents were asked whether the teaching of information literacy could be improved in any way. Fifty four (31%) respondents indicated that there was room for improvement, while 67 (38%) indicated that there was no need for the information literacy teaching to be improved. A large number of respondents 54 (31%) said that they were not sure. Two respondents did not respond to the question. These results are reflected in Figure 23.

Figure 23: Can the teaching of IL be improved? (N=177)



The 54 respondents who were of the view that the teaching of information literacy could be improved were asked to explain their answer. Table 6 below summarises the responses by the 39 respondents who answered.

Table 6: How the teaching of IL can be improved (N=54)

Responses	Response count	Response percentage
Students should be given basic computer knowledge before the IL classes commence to ensure everyone understands what is going on	18	46%
Have more computers for students and provide stronger internet connection because sometimes the computers do not work	7	18%
More time could be allocated for the IL classes to benefit those students who do not have computer access and have never had computer access before so that they have a good understanding about the assignments and referencing	6	15%
Information literacy should be recommended to all students not only to some departments, all first years should attend the course	5	13%
IL classes should not clash with other lectures	4	10%
Total providing explanations	39	72%
Did not provide explanations	15	38%

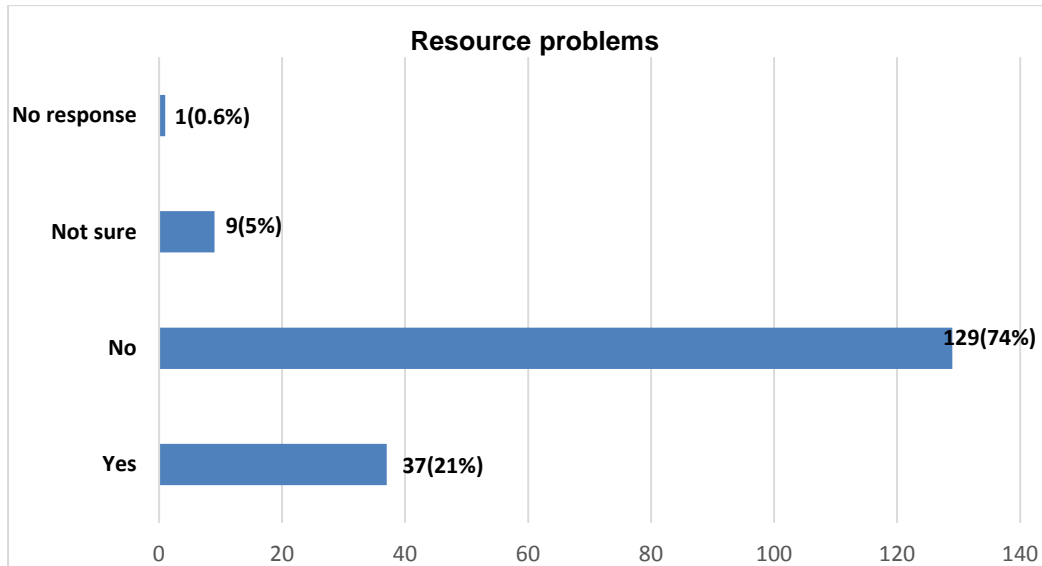
The highest percentage of students (46%) responding to the question that information literacy can be improved indicated that students should be given basic computer knowledge before the information literacy classes commence to ensure that all students understood the classes. This lack of computer knowledge was reflected by a further 15% of respondents indicating that more time be allocated for information literacy classes because many were not exposed to computers before.

4.2.25 Problems/challenges with resources in the IL class

Respondents were asked to indicate whether they experienced any problems in terms of resources while attending information literacy classes such as problems with the computers. Thirty seven (21%) respondents indicated that they did experience problems while attending

the classes and 129 (74%) of respondents indicated that they did not experience problems. Nine (5%) were not sure and two (1%) respondents did not respond to the question.

Figure 24: Resource problems (N=177)



Respondents who indicated that they experienced problems were asked to explain their response. Table 7 outlines the problems experienced in terms of resources mentioned by 33 out of 37 respondents. The vast majority of the problems experienced had to do with computers and in particular their slowness.

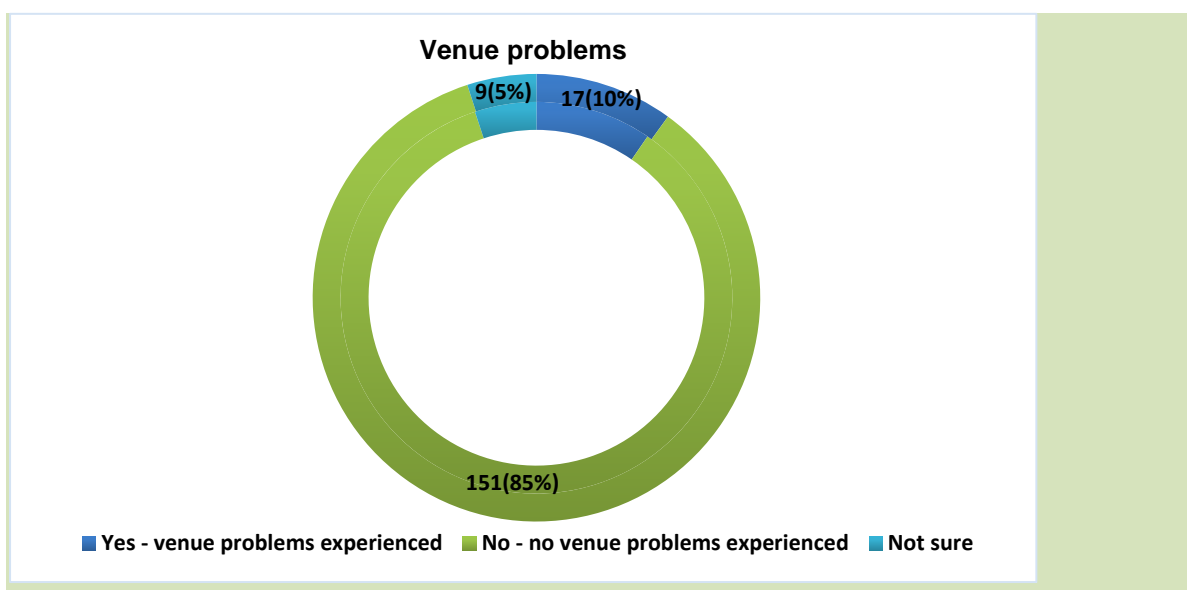
Table 7: Resource problems (N=37)

Problems	Response count	Response percentage
Problems with internet connection	4	12%
Computers slow – difficult to keep up with lecturer	15	45%
Computers not working	6	18%
Insufficient computers	5	15%
Computers outdated	3	9%
Total providing explanations	33	89%
Did not provide explanations	4	11%

4.2.26 Challenges with venues while attending IL classes

Respondents were asked to indicate whether they experienced any problems with venues while attending the information literacy classes. Seventeen (10%) of respondents indicated that they did experience problems with venues while attending the classes and 151 (85%) indicated that they did not experienced problems with venues. Nine (5%) indicated that they were not sure.

Figure 25: Challenges with venues (N=177)



Respondents who experienced problems were asked to explain what problems were experienced. Table 8 summarises the responses from the 14 out of 19 students who provided explanations.

Table 8: Venue problems (N=19)

Venue problems	Response count	Response percentage
Got lost in the beginning	6	43%
Difficult to find venues because they are not very visible	3	21%
Had to move from one campus to another	2	14%
Difficult to find venues if you are first year students	2	14%
Students were not told where the venue was in the Library	1	7%
Total providing explanations	14	74%
Did not provide explanations	5	26%

4.2.27 Any other comments regarding IL classes

Respondents were asked to indicate if they had any other comments about the information literacy classes. Out of 177 students, 114 (64%) answered the question and 63 (36%) did not respond to the question. The comments are summarised in Table 9.

Table 9: Other comments (N=177)

Other comments	Response count	Response percentage
IL classes have a positive impact on students referencing	27	24%
IL classes were extremely useful and helped with writing assignments	25	22%
IL test contributed positively towards the DP marks	20	16%
IL classes should be more than once a week and throughout the year so that students do not forget what they learn	12	10%
Proper working computers are needed	13	11%
Students can search for and evaluate information on the Internet	10	9%
Librarians were extremely helpful, approachable and always prepared to help	10	9%
Total providing comments	114	64%
Did not provide comments	63	36%

4.3 Presentation of findings based on lecturers' questionnaire

Data was collected from all 10 lecturers (N=10) who were directly involved in the information literacy interventions of these specific Departments in 2015. This section presents the findings of the survey with these lecturers. Responses to the open-ended questions of the questionnaire were analysed with data being grouped into themes and presented in table format.

4.3.1 Respondents' profiles

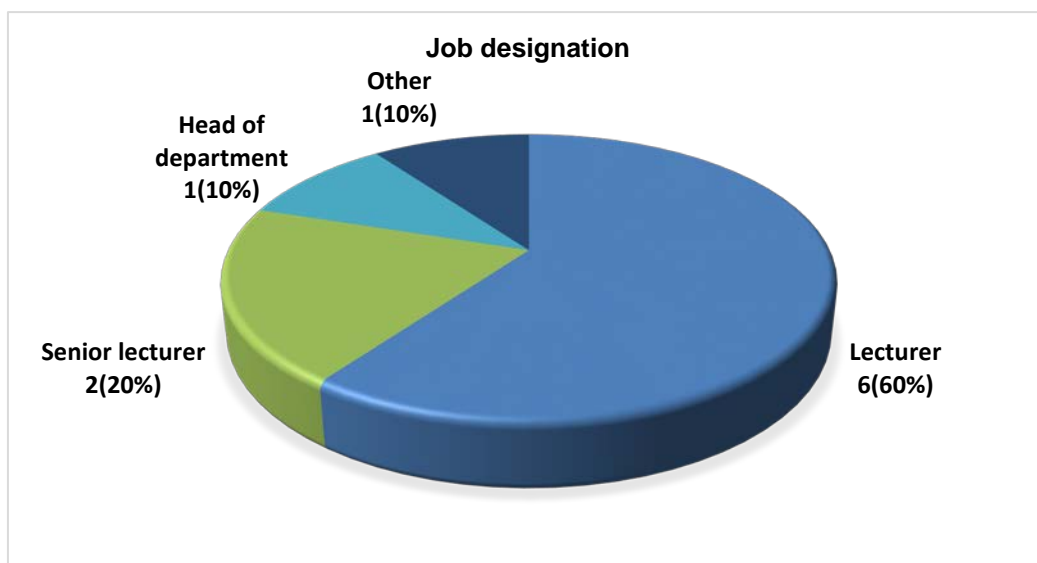
4.3.1.1 Form of employment

Respondents were asked to indicate whether they were in part-time or full-time employment at the Durban University of Technology (DUT). The reason for this question was that sometimes part-time lecturers do not necessarily get involved with first year fully integrated coursework modules. All respondents indicated that they were in full time employment.

4.3.1.2 Job designation

Respondents were asked to indicate their current job designation. As can be seen in Figure 26, the majority of respondents (60%) were lecturers. The "Other" option referred to any other designation.

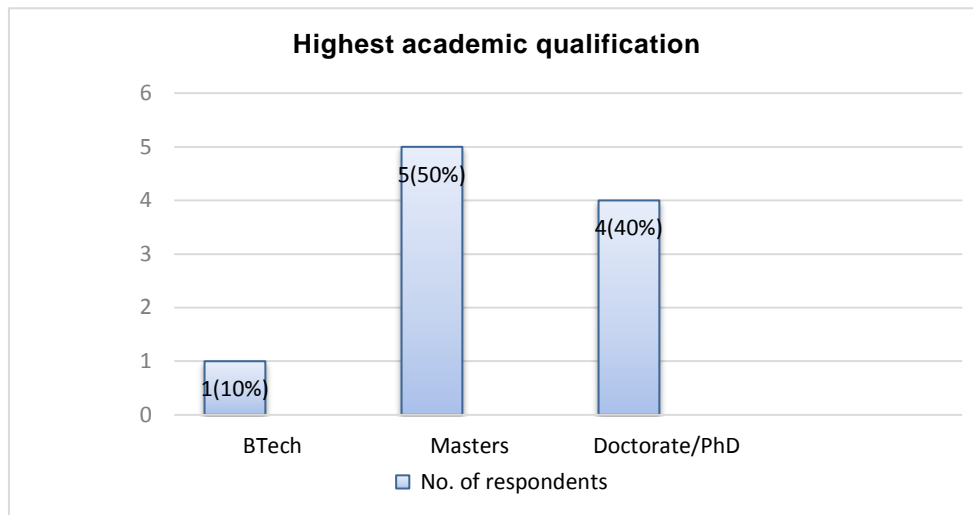
Figure 26: Job designation (N=10)



4.3.1.3 Highest academic qualification

Respondents were asked to indicate their highest academic qualifications. The vast majority of respondents (90%) had either a Doctoral or Masters level qualification as reflected in Figure 27.

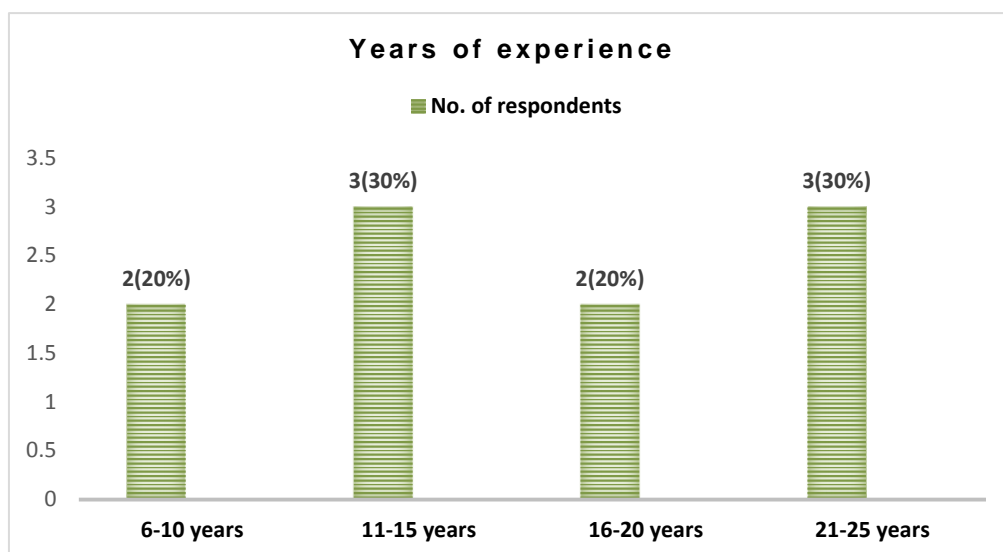
Figure 27: Qualification status (N=10)



4.3.1.4 Years of experience

Respondents were asked to indicate how many years of experience they had in their current position. Figure 28 indicates that 80% of respondents have 11 or more years' experience in their positions.

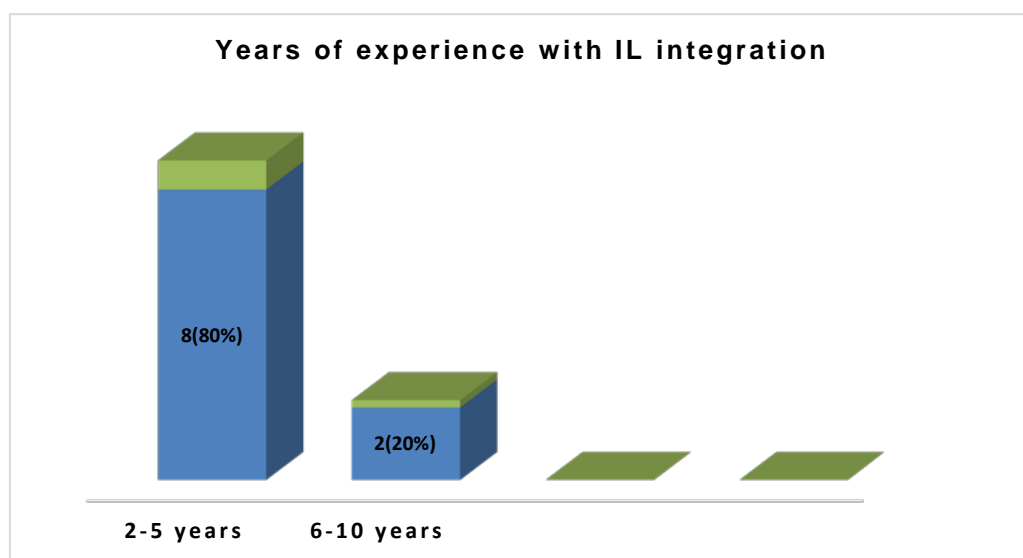
Figure 28: Years of experience in current job (N=10)



4.3.2 Years of experience with IL integration

Respondents were asked to indicate the number of years of experience that they had with regard to information literacy integration. The number of years of experience between the 10 respondents constitutes a fairly good number as all had more than two years and two between six and 10 years.

Figure 29: Years of experience with IL integration (N=10)



4.3.3 Lecturer liaison with subject librarian

Respondents were asked whether the liaison with the subject librarian worked well when integrating information literacy into the curriculum. All ten respondents indicated that the liaison between the subject librarian and them worked well. The good working relationship between the subject librarian and lecturer is an important element in an integrated information literacy programme.

Respondents were asked to explain further about the liaison. Table 10 below provides the responses of the six respondents who gave further explanations.

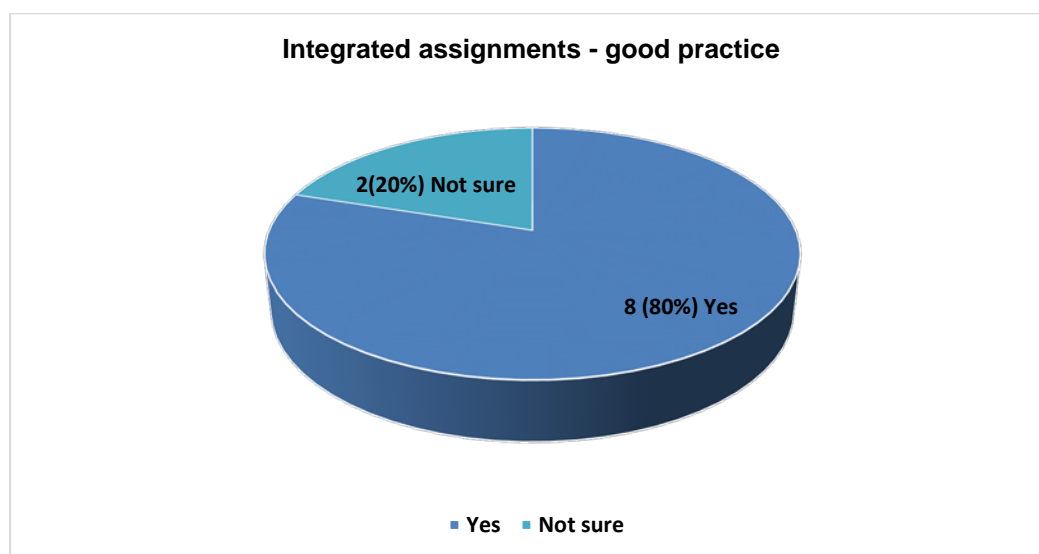
Table 10: Explanations regarding lecturer-subject librarian liaison (N=6)

Explanations	Response count	Response percentage
Students were more equipped and were able to apply their knowledge to their written assessments	1	17%
Students were given assignments which they had to complete with the assistance of the subject librarian	1	17%
When designing the study guide, there was consultation with the subject librarian	1	17%
Excellent support received from the librarian	1	17%
There was better understanding amongst the first year students	1	17%
Positive feedback was received from the students regarding the information literacy programme	1	17%
Total providing explanations	6	100%

4.3.4 Integrated assignments – good practice

Respondents made use of integrated assignments and/or projects which they submitted to the subject librarian to be used in the information literacy class. They were asked whether this was good practice.

Figure 30: Integrated assignments – good practice (N=10)



Eight (80%) of the respondents agreed that the use of integrated assignments was good practice and two (20%) of the respondents indicated that they were not sure. Of the eight respondents who agreed that it was good practice, four respondents provide explanations that are in Table 11.

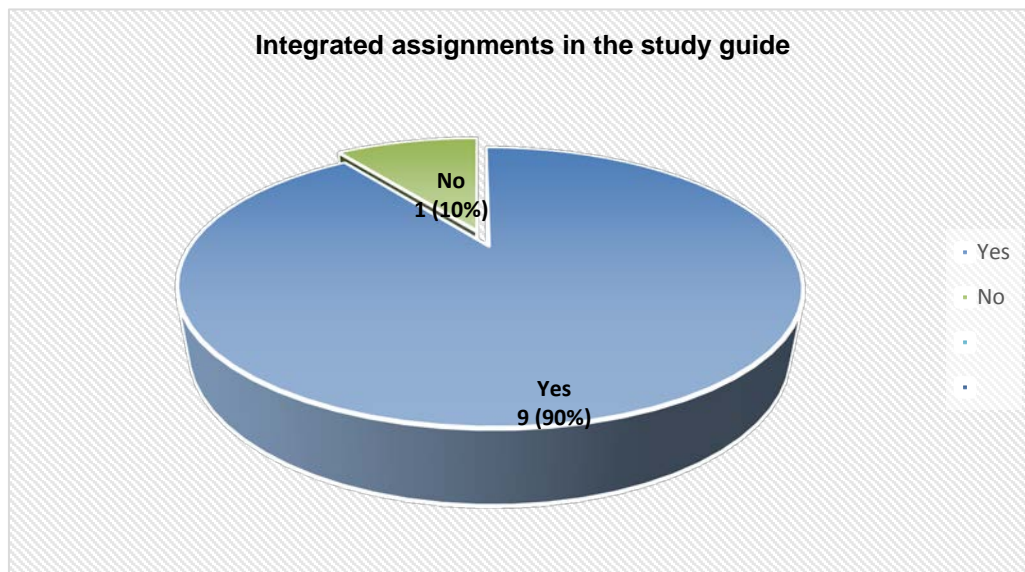
Table 11: Explanations for using integrated assignments as good practice (N=4)

Explanations	Response count	Response percentage
Students benefited by receiving information for their assignments and they were assisted with identifying key terms for the assignment	1	25%
Students were able to draw the link between information literacy and the course assignments	1	25%
Students and the librarian had a common goal to work towards and this focused the training and provided concrete guidelines for them	1	25%
Information literacy forms part of the final mark	1	25%
Total providing explanations	4	100%

4.3.5 Were integrated assignments set out formally in the study guide?

Respondents were asked whether the integrated assignments were set out formally in the study guide. Nine (90%) of the respondents indicated that the integrated assignments were set out formally in the study guide and one (10%) respondent indicated that this was not the case. Figure 31 provides an indication of the results.

Figure 31: Integrated assignments and study guide (N=10)

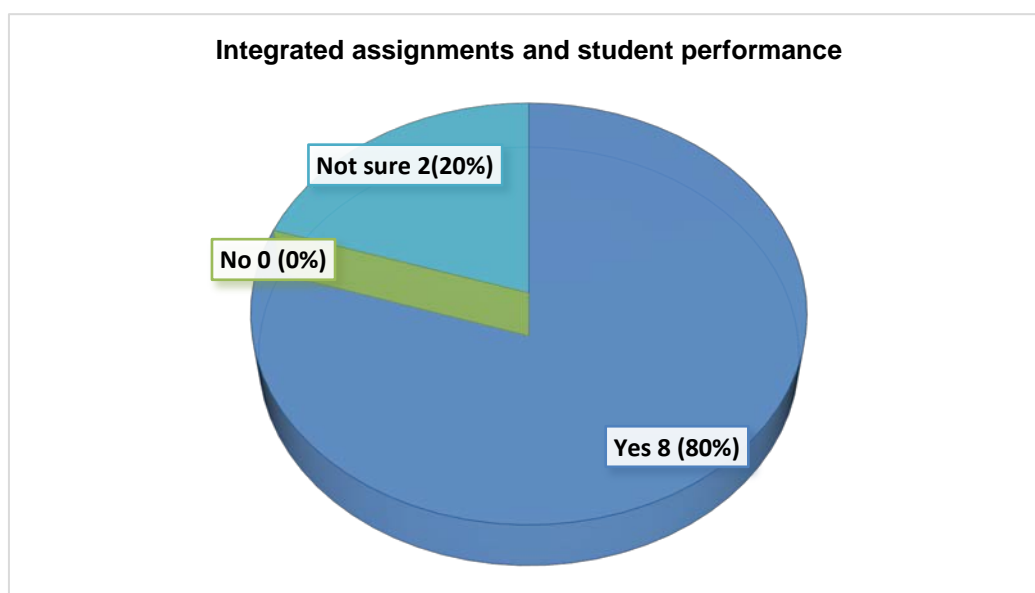


Respondents were asked to further explain and only one (10%) respondent did so. The respondent said the following: “Integrated assignments were formal assessments, which were set out in the study guide. Students were made aware of this well in advance.”

4.3.6 Integrated assignments and students’ performance – writing of assignments

Respondents were asked whether using integrated assignments made a positive contribution to students’ performance in terms of the way in which they wrote assignments. Eight (80%) respondents indicated that using integrated assignments made a positive contribution to student performance and students were able write better assignments, while two (20%) respondents indicated uncertainty with regard to the issue.

Figure 32: Student performance using integrated assignments – (N=10)



Respondents were asked to further explain their answer. There were 6 responses and Table 12 below lists the explanations.

Table 12: Student performance using integrated assignments (N=6)

Explanations	Response count	Response percentage
Students made a better effort by using the knowledge that they gained on accessing information and referencing correctly	1	17%
Students received assistance in identifying what the assignment questions were asking	1	17%
Students still had to be reminded on an ongoing basis	1	17%
The integrated assignments contributed to improved writing	1	17%
A marked overall improvement has been seen	1	17%
Standards were higher and referencing was better	1	17%
Total providing explanations	6	100%

4.3.7 Integrated IL programme– students better equipped to find and use relevant information

Respondents were asked whether the integrated information literacy programme with the subject librarian better equipped the students to find and use relevant information for their assignments. All 10 (100%) respondents answered in the affirmative. When asked to explain their answer, four of the 10 respondents did so and their responses are indicated in Table 13 below.

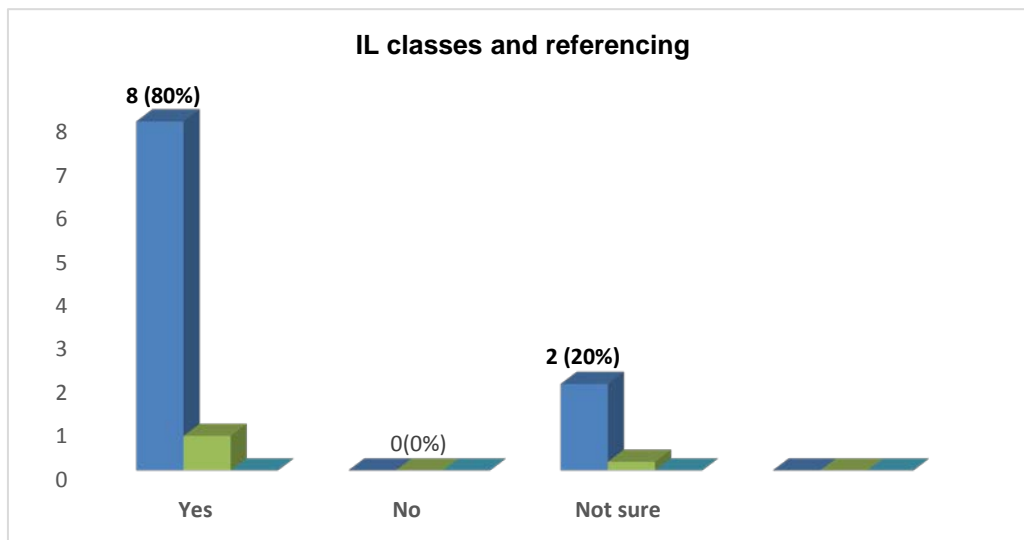
Table 13: IL classes and better equipped students (N=4)

Explanations	Response count	Response percentage
The integrated assignments focused the information literacy training	1	25%
Student performance evident in student assignment submissions	1	25%
Better writing skills were seen	1	25%
The librarian’s expertise and experience is invaluable	1	25%
Total providing explanations	4	100%

4.3.8 Attendance of IL classes and students’ referencing

The respondents were asked whether students referenced correctly after attending the information literacy classes. Of the 10 respondents, eight (80%) of the respondents indicated that students were able to reference their assignments correctly and the remaining two (20%) respondents were unsure.

Figure 33: IL classes and students' referencing (N= 10)



Respondents were asked to further explain their answer and 6 did so. Table 14 below indicates the results.

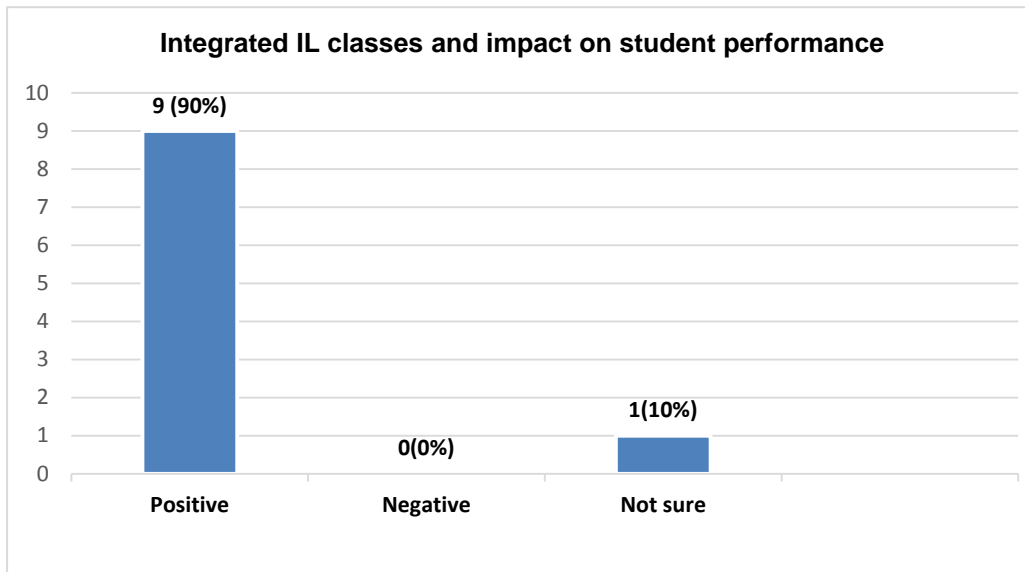
Table 14: IL classes and students' referencing (N=6)

Explanations	Response count	Response percentage
They were better than before but only some were 100% correct. This has to do with the amount of effort that the students put into attending the classes and using the information that is offered to them	2	33%
Students did perform better in their referencing while attending the information literacy classes, however, once the classes were over they seemed to have forgotten and had to be reminded consistently	1	17%
Some students still struggled	1	17%
Students referenced better after attending the information literacy classes but some students failed to take the training seriously. More practice is required	1	17%
Some improvement in referencing.	1	17%
Total providing explanations	6	100%

4.3.9 Integrated IL classes and impact on students' academic performance

Respondents were asked to indicate, from their experience, what the impact of integrated information literacy classes has been on students' academic performance, that is, was it "positive", "negative" or were they "not sure". Nine (90%) respondents indicated that the integrated information literacy classes had made a positive impact on students' academic performance and one (10%) respondent indicated uncertainty and selected the "not sure" option.

Figure 34: Integrated IL classes and impact on student’s performance (N=10)

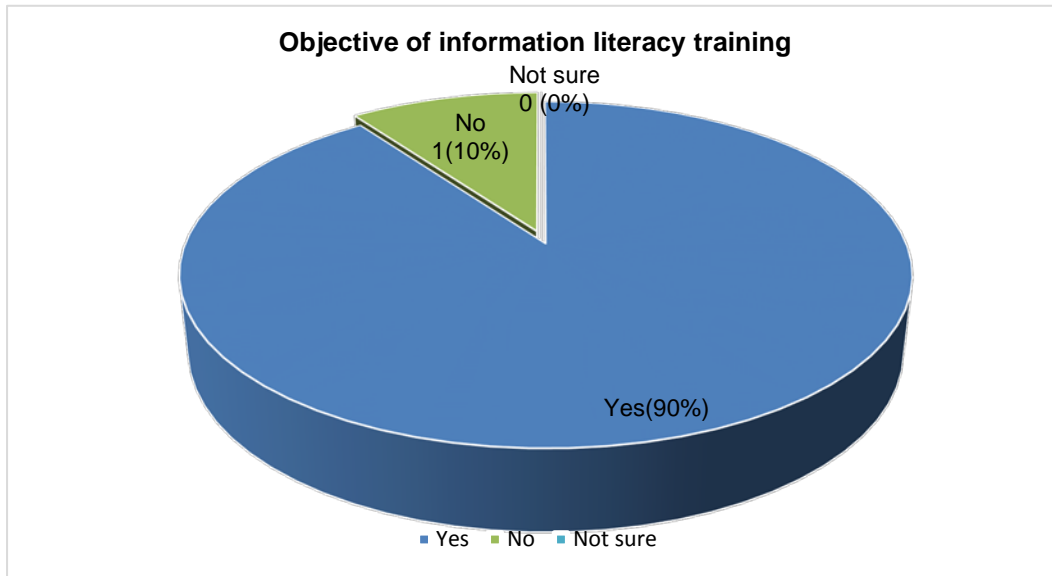


Respondents were asked to provide explanations for their responses. Only two were able to do so. The first respondent pointed to students being better prepared at higher levels while the second stated that “The information literacy intervention was linked to the subject taught and was beneficial.”

4.3.10 Objective of information literacy training

The objective of the integrated information literacy training is to ensure that students are able to recognise the need for information, locate and retrieve information, evaluate information and use information responsibly. Respondents were asked to give an indication, from their experience, whether this objective was met or not. Nine (90%) respondents indicated that the objective of the training was met while one (10%) respondent was not sure.

Figure 35: Objective of information literacy training (N=10)



The respondents were asked to provide an explanation and four did so. Their explanations are outlined in Table 15 below. Two of the respondents qualified their previous answer.

Table 15: Objectives of information literacy training (N=4)

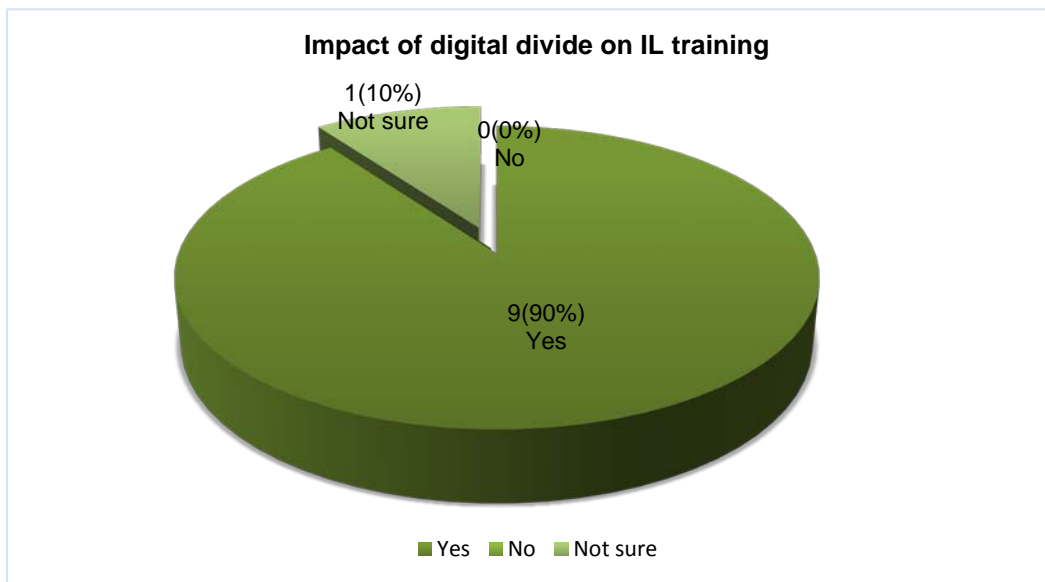
Explanations	Response count	Response percentage
Yes to some degree	2	50%
Mostly - however I think that the students need more assistance with the evaluation of information as they sometimes include irrelevant bits of data in their assignments	1	25%
There should also be a link to the writing centre to improve academic writing	1	25%
Total providing explanations	4	100%

4.3.11 Impact of digital divide on IL training

Respondents were asked whether the digital divide, that is, amongst other things, the lack of access for some people to ICTs and the lack of skills to use the ICTs plays a part in the teaching and learning of information literacy.

Nine (90%) of the respondents indicated that the digital divide did play a part in the teaching and learning of information literacy and therefore did impact on the training while one (10%) respondent indicated uncertainty in this regard.

Figure 36: Impact of digital divide on IL training (N=10)



Respondents were asked to provide an explanation for their answer. There were two responses. One said “The digital divide impacts on training because students with different abilities sit in the same information literacy class”. The second respondent pointed to the assumption that “students requiring additional computer skills would be assisted.” This suggests, according to them, that assistance in this regard was not forthcoming.

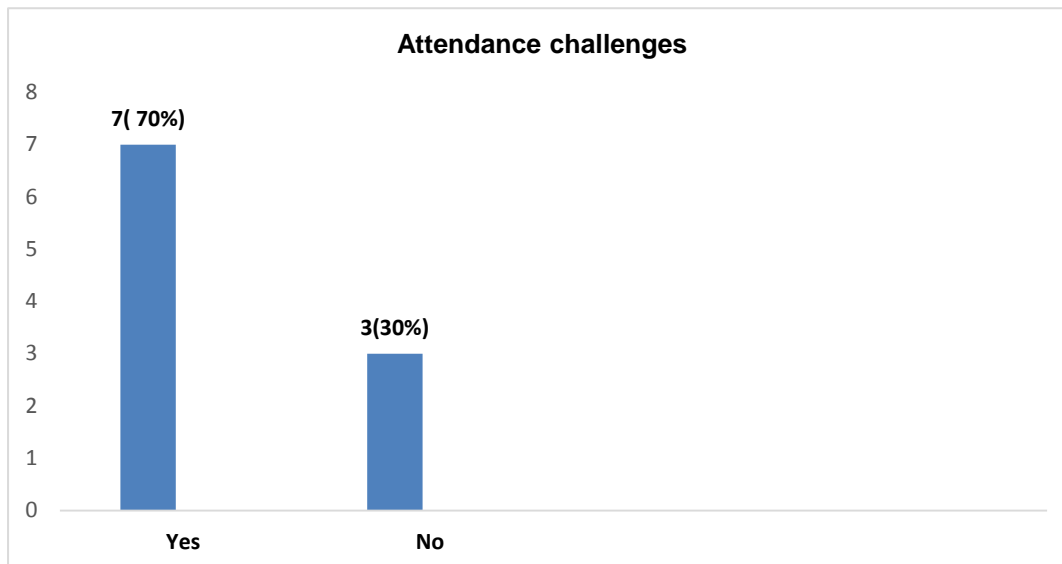
4.3.12 Challenges experienced with IL integration

Respondents were asked whether they experienced any challenges with integrating information literacy into the curriculum. Options were provided and the first concerned challenges relating to student attendance.

4.3.12.1 Attendance challenges

Figure 37 graphs the attendance challenges.

Figure 37: Attendance challenges (N=10)



Seven of the respondents (70%) indicated that there were challenges experienced with attendance and three of the respondents (30%) indicated that there were no challenges experienced. The respondents were asked to provide an explanation for their response and the seven who answered in the affirmative above did so. Their explanations are reflected in Table 16.

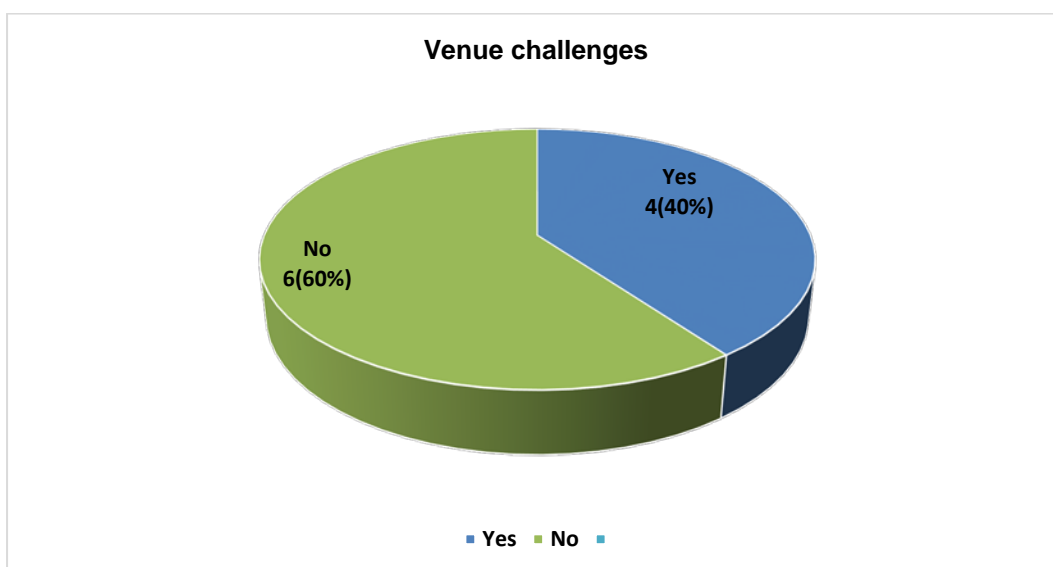
Table 16: Attendance problems (N=7)

Explanations	Response count	Response percentage
Initially there was a problem with poor attendance but this was somewhat rectified once students understood the importance of attending	2	29%
Timetabling problems resulted in classes being offered over a two week period. Students then lost track of when to attend	1	14%
Students also skipped some lessons, they assumed that it was not compulsory for them to attend	1	14%
Lack of taxi fare because some students work to pay fees	1	14%
The subject librarian complained about lack of interest in attending library information literacy classes	1	14%
Total providing explanations	6	100%

4.3.12.2 Venue challenges

Respondents were asked whether any challenges were experienced with venues. Four of the respondents (40%) indicated that there were challenges experienced with venues and six (60%) indicated that there were no challenges experienced.

Figure 38: Venue challenges (N=10)



The four respondents who said there were venue related challenges explained their answer and these are reflected in Table 17.

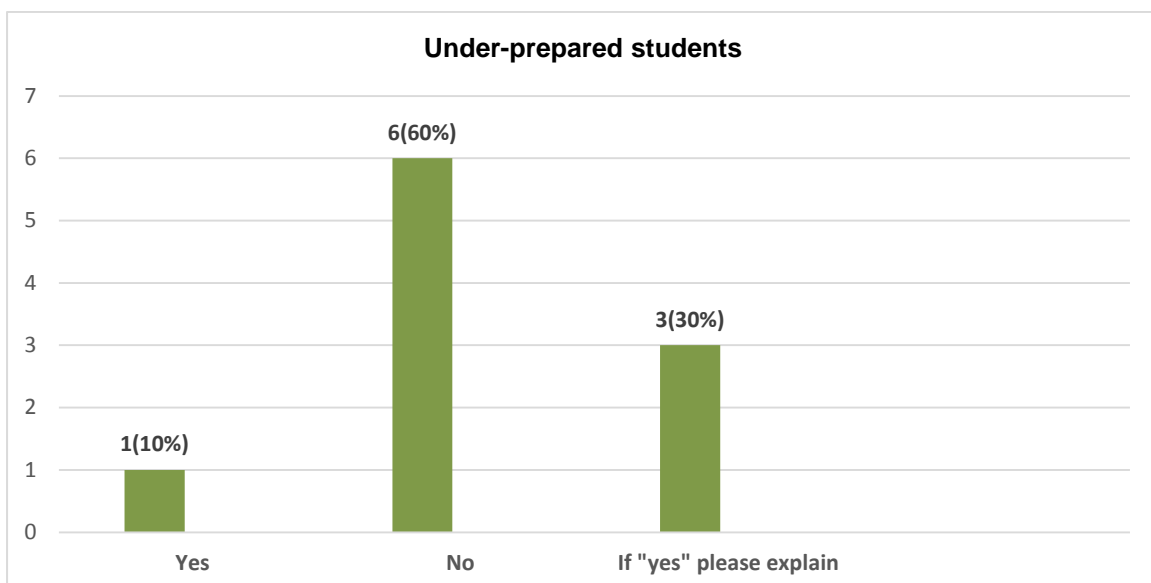
Table 17: Venue challenges (N=4)

Explanations	Response count	Response percentage
Student numbers and time slots had to be negotiated	2	50%
The subject librarian had to break the group into many smaller groups to accommodate the students in the library	1	25%
Lack of central control and conditions not conducive for teaching and learning	1	25%
Total providing explanations	4	100%

4.3.13 Under-prepared students

Respondents were asked whether they experienced any challenges with students being under-prepared in terms of not having the necessary computer skills and/or access to computers. One of the respondents (10%) indicated that there were problems experienced with under-prepared students in terms of not having the necessary skills and/or access to computers while six (60%) respondents indicated that there were no problems experienced. Three (30%) respondents chose the “if yes please explain” option

Figure 39: Under - prepared students (N=10)



The explanations given by the three respondents are reflected in Table 18.

Table 18: Under-prepared students (N=3)

Explanations	Response count	Response percentage
The gap is wide between those that have the skills and those that do not	1	33%
Not sure	1	33%
First generation university students / first encounter with technology	1	33%
Total providing explanations	3	100%

4.3.14 Other challenges

Respondents were asked to indicate if there were any other challenges experienced with integrating information literacy into the curriculum. Of the three who responded, two referred to the student strikes at the beginning of the year causing major logistical issues while the third stated that “No challenges from the lecturer side.”

4.3.15 Ways to improve information literacy teaching

Respondents were asked to indicate what can be done to improve the teaching of information literacy. Six respondents each gave a suggestion and these are listed in Table 19. The table below is a list of ways to improve.

Table 19: Ways to improve IL teaching (N=6)

Suggestion	Response count	Response percentage
More time slots/venue availability - Writing Centre to be incorporated into these sessions as well	1	17%
More practice on referencing and evaluating information	1	17%
Need for more teaching/contact time	1	17%
Increasing facilities	1	17%
More integrated assessments and resources dedicated to linking departments/academic with library staff	1	17%
Groups could be smaller	1	17%
Total providing explanations	6	60%

4.3.16 Other comments

In the final questionnaire item, respondents were asked to indicate if there were any other comments that they would like to make in regards to the integration of information literacy into the curriculum. Four respondents did so. Two referred to the integration as being “Good practice” while the remaining two said they had no other comments.

4.4 Presentation of findings based on subject librarians' questionnaire

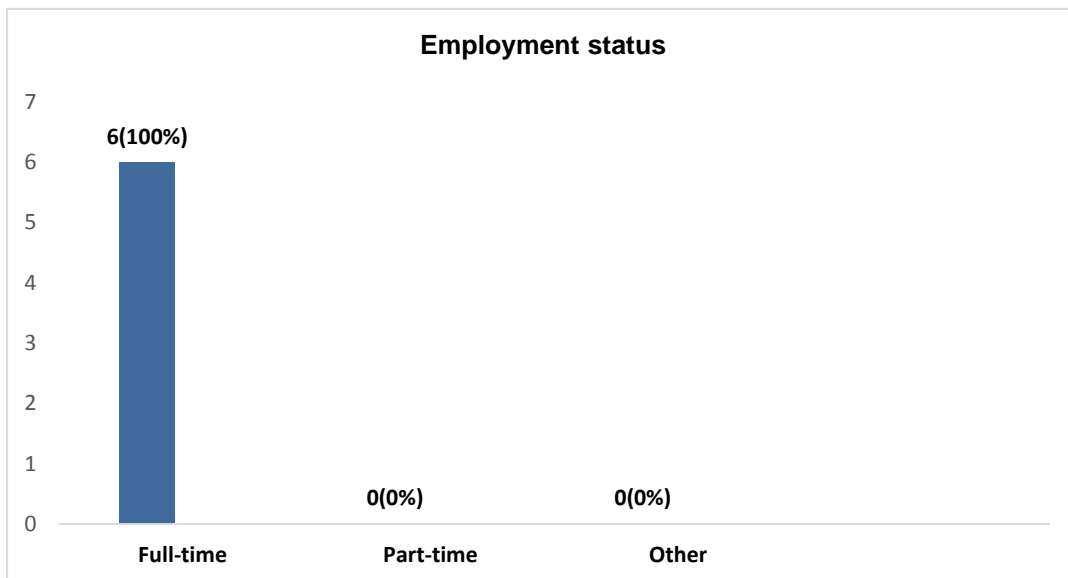
Data was collected from all subject librarians who were directly involved in the information literacy interventions in 2015 of the departments of Management, Retail, Public Relations and Marketing. The section that follows presents the findings of the survey. Responses to the open questions of the questionnaire were analysed with data being grouped into themes.

4.4.1 Respondents' profiles

4.4.1.1 Form of employment

Respondents were asked to indicate their form of employment. The total subject librarian population was six hence all six respondents were asked to indicate if they were full-time or part-time staff at the Durban University of Technology (DUT). All 6 respondents (100%) indicated that they were full time staff. There was no part-time respondents and no respondents from the "Other" group.

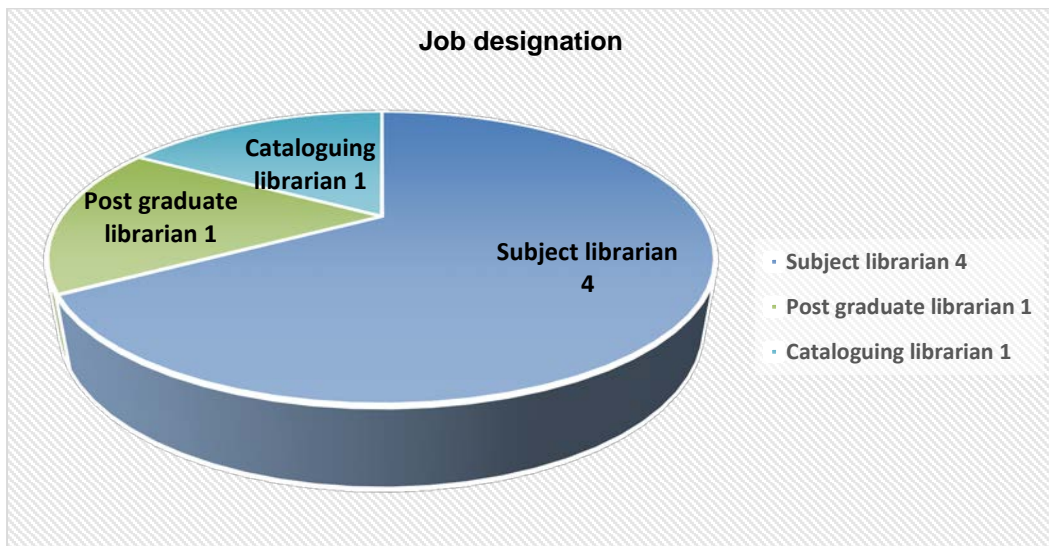
Figure 40: Employment status (N=6)



4.4.1.2 Job designation

Respondents were asked to indicate their current job designation. Four respondents indicated that they were subject librarians, one was a cataloguing librarian and one was a postgraduate librarian.

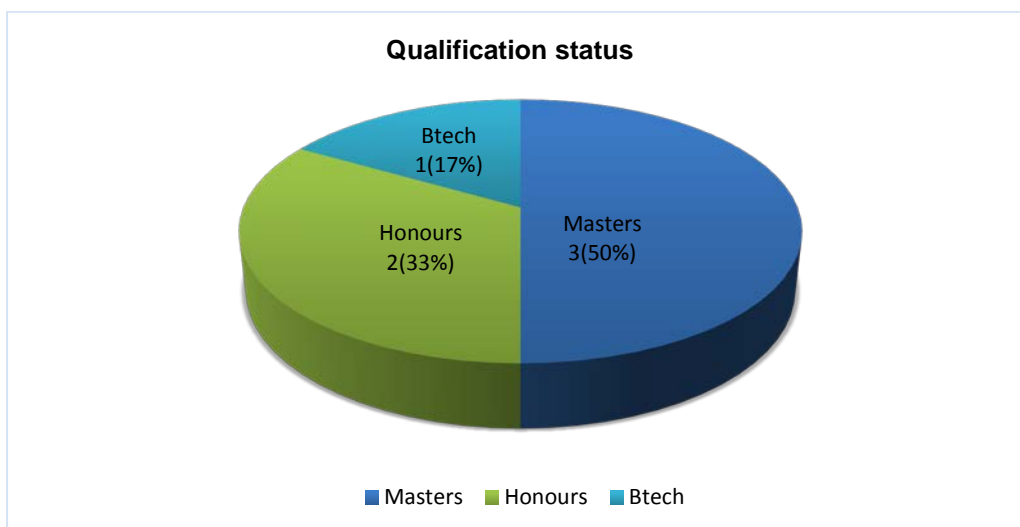
Figure 41: Job designation (N=6)



4.4.1.3 Highest academic qualification

Respondents were asked to indicate their highest academic qualifications. Out of the six respondents, three indicated a Masters qualification, two indicated an Honours qualification and one indicated a BTech qualification. Figure 42 graphs the results

Figure 42: Qualification status (N=6)



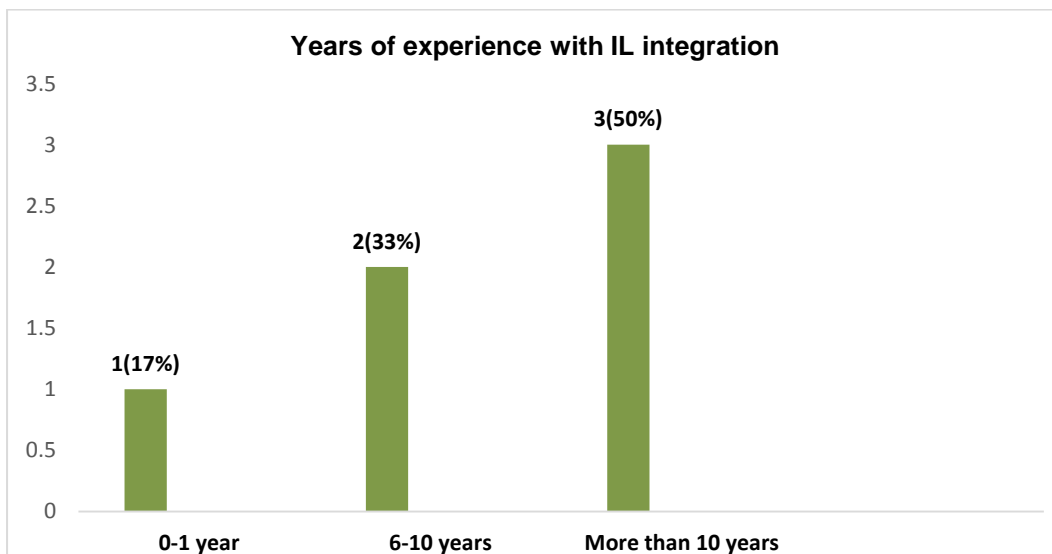
4.4.2 Years of experience

Respondents were asked to indicate how many years of experience they had in their current position. They indicated that they had between two and 25 years' experience between them.

4.4.3 Years of experience with information literacy integration

Respondents were asked how many years had they been involved in the teaching or training of information literacy integration with first year students. One respondent indicated between zero and one year's experience, two respondents indicated between six and 10 years' experience and three respondents indicated that they had more than 10 years' experience. The number of years between the respondents constitutes a fairly good number of years of experience with working with the teaching of information literacy as reflected in Figure 43.

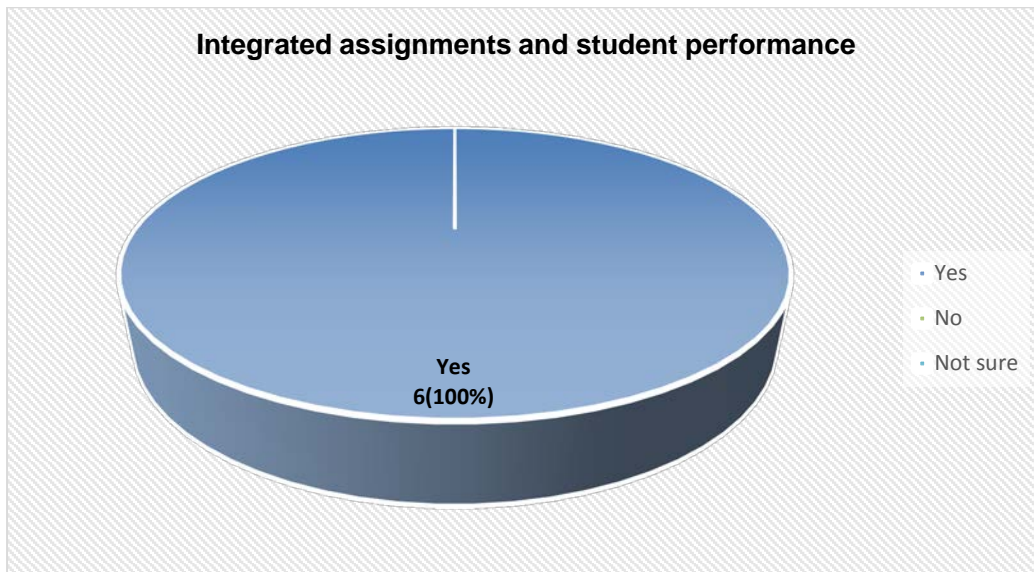
Figure 43: Years of experience with IL integration (N=6)



4.4.4 Integrated assignments and student's performance

Respondents were involved in the integration of information literacy with first year students and made use of assignments to teach information literacy. Respondents were asked to indicate whether this worked well in terms of students understanding their assignments better. All six respondents (100%) answered this question and all indicated that using the integrated assignments helped students understand their assignments better.

Figure 44: Integrated assignments and student's performance (N=6)



Respondents were asked to further explain their answer and Table 20 indicates the results. Three answered giving one reason each.

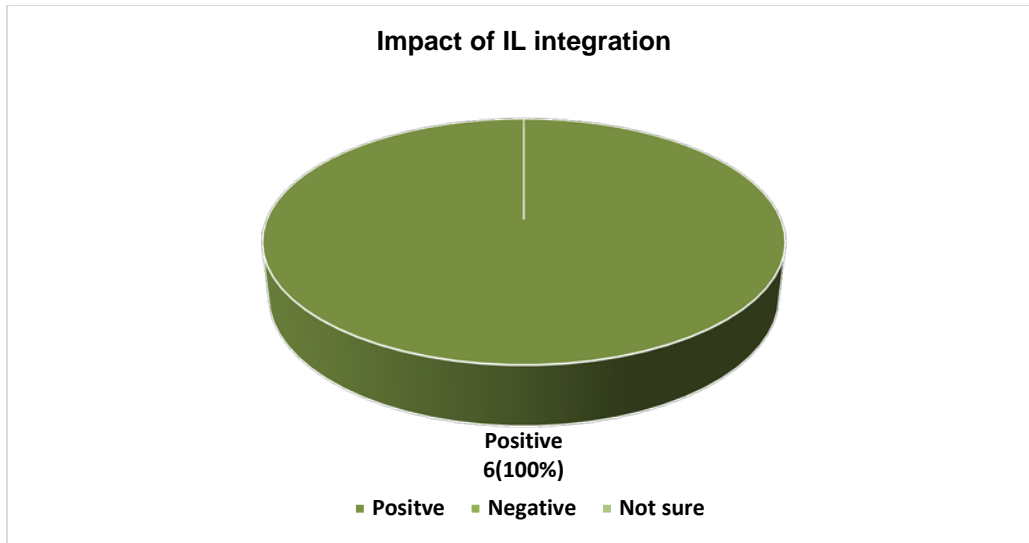
Table 20: Explanations of integrated assignments and student performance (N=3)

Explanations	Response count	Response percentage
It helped students understand the process of locating and acknowledging information	1	33.3%
Students could relate to what was being taught because of the assignments	1	33.3%
The first year students were able to produce well written assignments and their reference skills improved without any doubt	1	33.3%
Total providing explanations	3	100%

4.4.5 Impact of information literacy integration

Respondents were asked to indicate, from their experience, what the impact of information literacy integration was on students. All six (100%) respondents indicated that the impact of information literacy integration on students has been positive.

Figure 45: Impact of IL integration (N=6)



They were asked to further elaborate and Table 21 below lists the responses of the three respondents.

Table 21: Explanations of impact of IL integration (N=3)

Explanations	Response count	Response percentage
Because IL is integrated, students do not see it as a separate subject but appreciate the usefulness of the training	1	33.3%
They could find information much more easily	1	33.3%
Students are able to conduct productive research on their own although they sometimes get lost	1	33.3%
Total providing explanations	3	100%

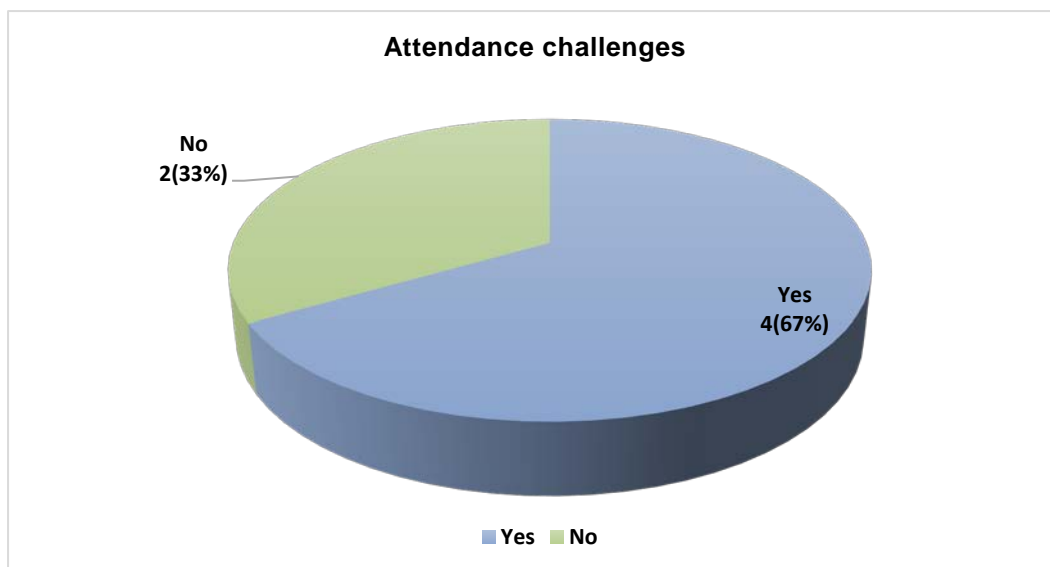
4.4.6 Challenges experienced with IL integration

Respondents were asked a series of questions with regard to the challenges experienced with information literacy integration. The first challenge mentioned was that of students' attendance at the classes.

4.4.6.1 Attendance challenges

Four respondents (67%) indicated that they had experienced attendance challenges while two did not.

Figure 46: Attendance challenges (N=6)



Four respondents provided an explanation each and Table 22 reflects the explanations given.

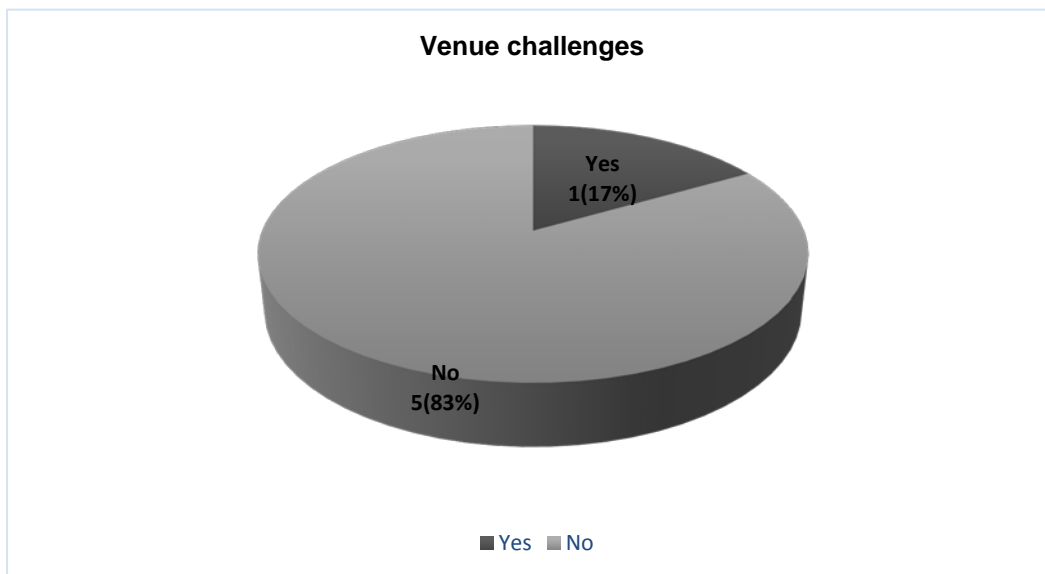
Table 22: Explanations for attendance problems (N=4)

Explanations	Response count	Response percentage
The first few classes were fine but after that some students would not attend classes and sometimes attend late	1	25%
Poor attendance	1	25%
Did not attend if they were studying for a test	1	25%
Some days attendance is good but some days a few turned up	1	25%
Total providing explanations	4	100%

4.4.6.2 Venue challenges

Respondents were asked whether they experienced any challenges with venues. One of the respondents (17%) indicated that there were challenges experienced with venues and five respondents (83%) indicated that there were none.

Figure 47: Venue challenges (N=6)



The respondents were asked to explain the responses and only one respondent who indicated that there were venue challenges provided various explanations in Table 23 below.

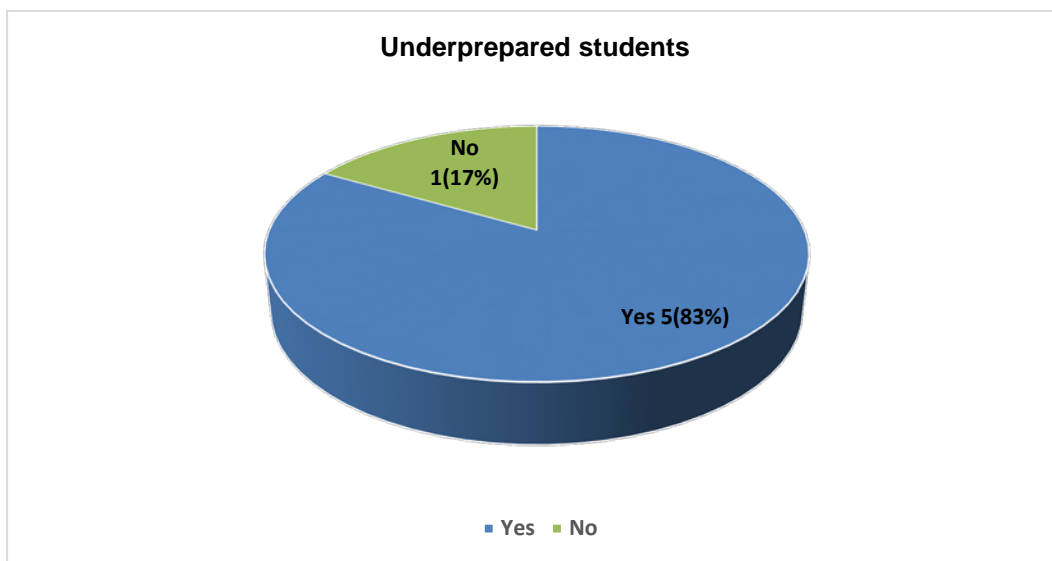
Table 23: Explanations for venue challenges (N=1)

Explanations	Response count	Response percentage
<p>Student numbers and time slots had to be negotiated with other subject librarians because of shortage of venues.</p> <p>The subject librarian had to divide the students into many smaller groups because it was easier to work with small groups in the venues in terms of individual help.</p> <p>Few venues sometimes became a problem because of other subject librarians' teaching.</p>	1	100%
Total providing explanations	1	100%

4.4.7 Under-prepared students

Respondents were asked whether they experienced any challenges with integrating information literacy into the curriculum, that is, did they experience challenges with students being under prepared in terms of not having the necessary computer skills and or access to computers. Five of the respondents (83%) indicated that there were challenges while one indicated that that were none.

Figure 48: Under-prepared students (N=6)



The respondents were asked to provide reasons for their responses and Table 24 below reflects the reasons from four of the five respondent who experienced problems.

Table 24: Under-prepared students (N=4)

Explanations	Response count	Response percentage
Some students did not have basic computer skills which meant that more time had to be spent showing them how to use the computers instead of continuing with the classes	1	25%
Some students could not use the keyboard and mouse	1	25%
Under-preparedness is declining compared to previous years	1	25%
Students come from various backgrounds and therefore a computer literacy course is necessary before the information literacy classes	1	25%
Total providing explanations	4	100%

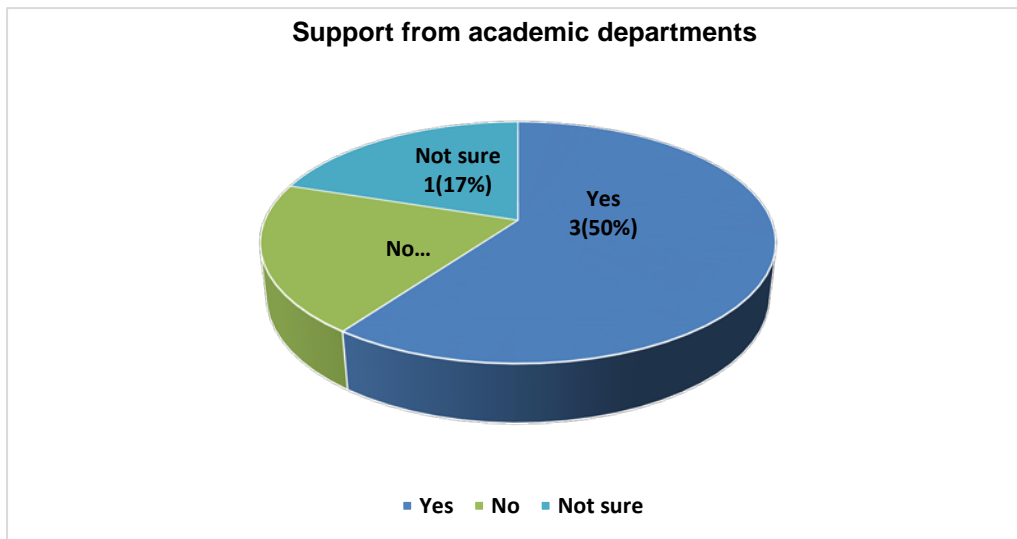
4.4.8 Other challenges

Respondents were asked to indicate if there were any other challenges experienced with integrating information literacy into the curriculum. One (33%) respondent replied and said that “Some students were not interested” while the second respondent indicated that from experience, if the information literacy classes are not credit bearing then the attendance is generally low and because these classes were credit bearing the attendance was good. There were no other responses.

4.4.9 Support from academic departments

Respondents were asked to indicate whether they received enough support from academic departments with integrating information literacy into the curriculum. Three (50%) respondents indicated that they received enough support from academic departments, one (17%) replied that there was not enough support, one (17%) was not sure. One respondent did not respond to the question.

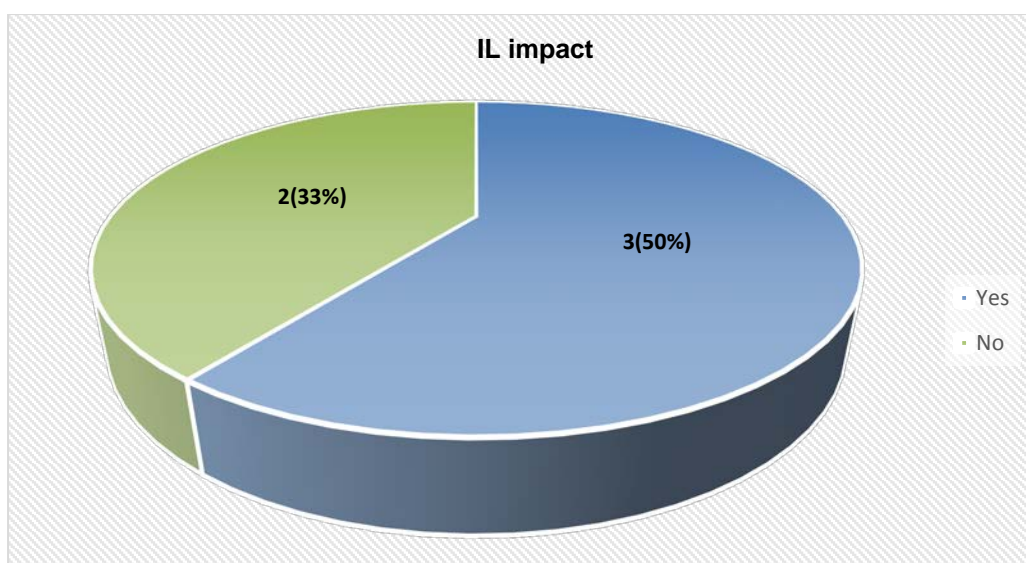
Figure 49: Support from academic departments (N=5)



4.4.10 Impact of digital divide on information literacy training

Respondents were asked whether the digital divide, that is, amongst other things, the lack of access for some people to ICTs and the lack of skills to use the ICTs plays a part in the teaching and learning of information literacy. Three respondents (50%) indicated that the digital divide did have an impact and two (33%) indicated that it did not. One respondent skipped the question.

Figure 50: Impact of digital divide on information literacy training (N=5)



Respondents were asked to provide explanations and Table 25 below reflects the responses of three respondents who indicated that the digital divide did play a part on the training.

Table 25: Explanations for impact of digital divide on IL training (N=3)

Explanations	Response count	Response percentage
The digital divide exists in the same class, therefore librarians have to spend more time with those who need more help with computers and this delays the class while at the same time the students who can use the computers become bored	1	33.3%
Yes, it does impact because if they had computer experience, they can follow easily in class	1	33.3%
The disadvantaged students have to first learn how to use the computers and then learn the information literacy skills necessary to find information	1	33.3%
Total providing explanations	3	100%

4.4.11 Computer training before attending information literacy classes

Respondents were asked to indicate whether students should have some sort of computer training before attending the information literacy classes. Four (67%) respondents indicated that there was a need for computer training, one (17%) indicated that there was no need for such training and one (17%) was not sure. The one respondent who indicated “No” replied “Not all need computer training. Only those that need computer training should attend otherwise it’s boring and unnecessary for those that have computer skills”. Three out of four respondents who indicated “Yes” have provided explanations which are listed in Table 26.

Figure 51: Computer training and IL classes (N=6)

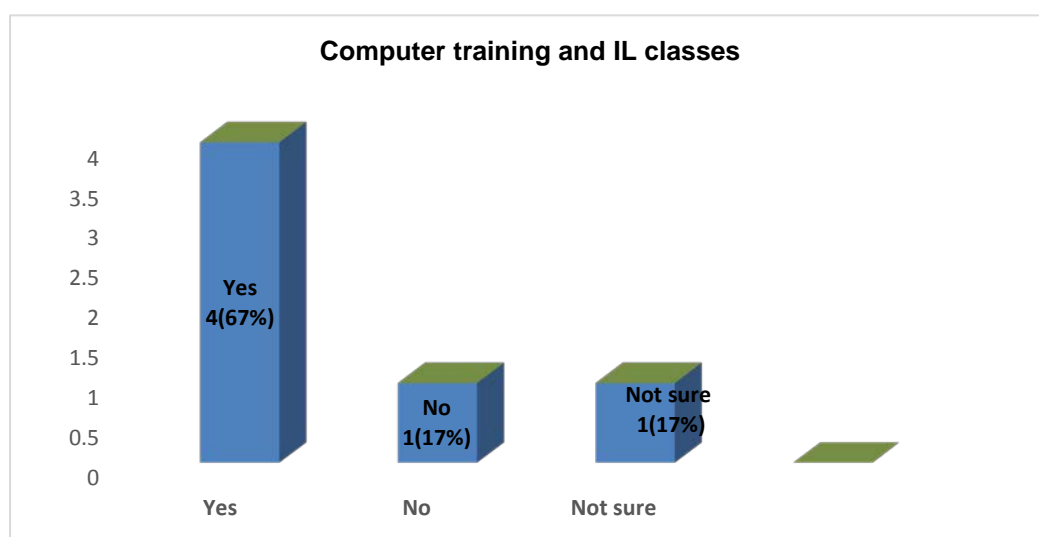


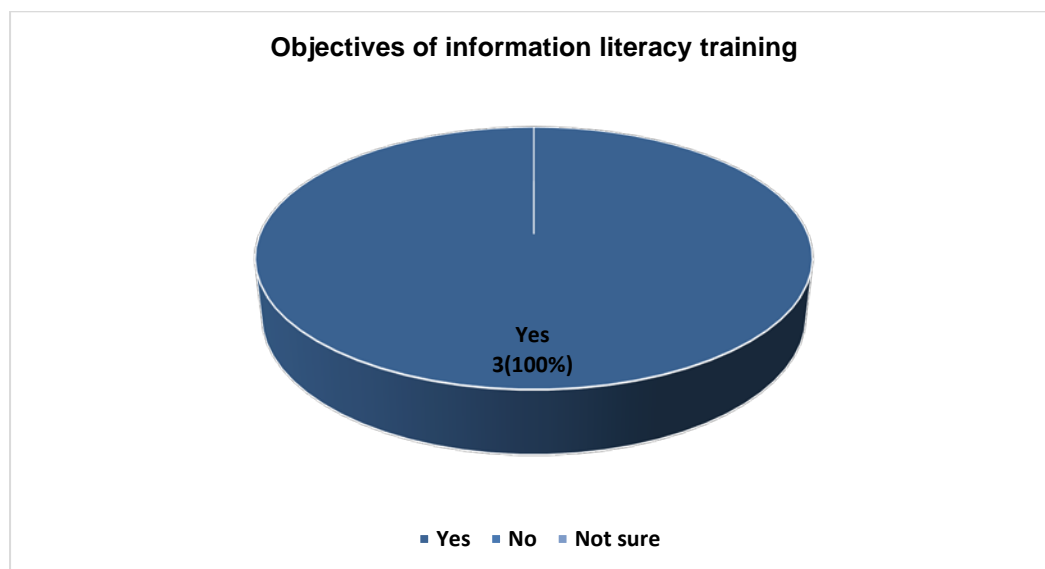
Table 26: Explanations for computer training before attending IL classes (N=3)

Explanations	Response count	Response percentage
In order to curb the digital divide	1	33%
Students learn IL skills quicker	1	33%
That will make things easy for them to follow the class and do not get left behind	1	33%
Total providing explanations	3	100%

4.4.12 Objectives of information literacy training

The objective of the integrated information literacy training is to ensure that students are able to recognise the need for information, locate and retrieve information, evaluate information and use information responsibly. Respondents were asked to provide an indication, from their experience, whether this objective was met. All six respondents (100%) indicated that the objective was being met.

Figure 52: Objective of information literacy training met (N=6)



Three of the six respondents provided an explanation for their response and these are outlined in Table 27.

Table 27: Explanations for IL training objective being met (N=3)

Explanations	Response count	Response percentage
IL sessions enable students to make the best use of library resources and also it broadens their knowledge of collecting and retrieving information	1	33.3%
Yes, but to a limited extent. Often they forget or do not attend very well	1	33.3%
They produce well written assignments as the year progresses	1	33.3%
Total providing explanations	3	100%

4.4.13 Ways to improve information literacy teaching

Respondents were asked to indicate what can be done to improve the teaching of information literacy. Table 28 lists the ways to improve, provided by the respondents.

Table 28: Ways to improve IL teaching (N=5)

Explanations	Response count	Response percentage
Offer these lessons right at the beginning of the semester before it gets busy because when they are busy they tend to focus on their course work more than the library orientation classes. Introduce online exercises and maybe that would encourage students to be diligent to do their exercises after the lessons	1	20%
Support from academics help a lot	1	20%
Increasing facilities	1	20%
Happy with the way things are done especially with the undergraduates	1	20%
Computer literacy to be compulsory for all students Information literacy to be compulsory for all students from 1st year. All Information literacy classes to be credit bearing. Better equipped venues with up-to-date technology	1	20%
Total providing explanations	5	100%

4.4.14 Any other comments

Respondents were asked to indicate if there were any other comments that they would like to make with regards to the integration of information literacy into the curriculum. The responses of three respondents are reflected in Table 29.

Table 29: Any other comments (N=3)

Explanations	Response count	Response percentage
All IL should be made compulsory to students just like communication and computer training because the knowledge they get from these sessions is lifelong and can help them when they are doing their post grad studies as well	1	33.3%
Increase library facilities	1	33.3%
A very good relationship between Subject Librarian and Academic is required as well as clear goals set for purpose of Information Literacy	1	33.3%
Total providing explanations	3	100%

4.5 Focus group results for students who were part of the information literacy (IL) integrated training at the Durban University of Technology (DUT)

This section presents the findings of the focus group interview with six students who attended the information literacy training. The participants selected were based on their availability and only those who attended the information literacy classes and participated in the online survey were included. Of the six participants, two were from the Marketing Department, two from the Public Relations Department, one from the Management Department and one from the Retail Department. Notes were taken during and immediately after the interview and these are reported on below. While some results are quantified in the main survey they are given in narrative form below. The questions asked provide the headings under which the results are given.

4.5.1 Class attendance

Participants were asked whether they attended all the information literacy classes as per their timetable. Four (67%) students indicated that they attended all the information literacy classes while two (33%) indicated that they did not attend all the information literacy classes. When asked why they did not attend all the classes, the two students provided a number of reasons and these are as follows:

- Clashes with other classes
- Sometimes IL was the only class for the day and they did not want to waste bus fare
- Timetables were not clear enough from the lecturers
- Writing other subject tests on the days when the IL classes were scheduled.

4.5.2 Benefitted from the integrated information literacy classes

Participants were asked to indicate whether they benefited from the integrated information literacy classes. Five (83%) students indicated that they benefited from the classes while one (17%) indicated that the classes were not beneficial. When the one participant who indicated that the classes were not beneficial was asked why the classes were not beneficial he/she stated the following:

- The librarian was sometimes too fast
- No previous access to computer use.

4.5.3 Benefits of the integrated information literacy classes

Participants were asked how they had benefitted from the information literacy classes and the following responses were given:

- Could reference better than before
- Much easier to find books for assignments
- Received better marks for assignments.

One student who had indicated that he/she had benefitted felt that it was still difficult to find information for assignments and thus needed more help in this regard.

4.5.4 Finding information for assignments

Participants were asked whether they would have been able to find information for their assignments without the information literacy classes. All six students indicated that they would not have been able to find relevant information for their assignments without the classes. One student stated that “The classes pointed them out to the correct information.” It was interesting to note that one of the students who previously indicated that he/she did not benefit from the classes in a previous question now agreed that information for assignments would not have been easy to find without the classes.

4.5.5 Digital divide

Participants were asked whether the digital divide had an impact on the information literacy training and to elaborate in terms of their experience with the digital divide in the classroom. Five (83%) indicated that the digital divide had an impact on the information literacy training while one (17%) student indicated that the digital divide did not have an impact. Their

responses are stated below regardless of whether they believed that the digital divide had an impact or not:

- Students with different abilities sat in the same information literacy classroom and the classes had to be paced out to take into account all students
- Some students who experienced difficulties with using the computers felt left behind and could not concentrate
- There should be more assistance given to students who have not used computers before
- Students catch up even if they are not very familiar with computers
- Students manage to find relevant assignment information anyway.

4.5.6 South African schools

Participants were asked whether South African schools were responsible for the digital divide that exists at universities which impacts on students' performance. Five (83%) of the students agreed that the South African schools were responsible for the digital divide and one (17%) student indicated that the South African schools were not responsible. The responses, when participants were asked to elaborate, are listed below regardless of whether they agreed that South African schools had an impact on the digital divide or not:

- Disadvantaged schools have limited resources
- Some schools do not have any computers
- Some schools just do not have the money for computers
- Students can use their cell phones so they should learn how to find information for their assignments in the same way.

4.5.7 Administering of information literacy classes

Participants were asked whether they experienced any problems with the way in which the information literacy classes were administered, that is, the way in which the classes were taught. One (17%) student indicated that there were problems experienced with the information literacy classes and five (83%) students indicated that they did not experience

any problems with the information literacy classes. Their responses are listed below regardless of whether they experienced problems:

- Classes were too short
- Sometime students arrived late so we had to start late
- It was all good
- The classes were clear and understandable
- These classes should be given every year as a refresher not only to first years.

4.5.8 Recommendations

Students were asked whether there were any other recommendations that they would like to make regarding the information literacy classes and the responses are reflected below:

- There should be more classes every year because students forget in the first year
- The classes should be longer than one hour so that they are not rushed
- Student who do not have previous computer training should have basic training on the computer before attending the classes
- The classes were very useful and students were able to find their information easily.

4.6 Summary

Chapter 4 presented the results of the study which set out to assess the integration of information literacy of the 2015 first year students of the Departments of Management, Marketing, Retail and Public Relations from the Faculty of Management Sciences at DUT Durban campus. The findings were based on the data collected from students, lecturers and subject librarians. The data was collected by means of an online survey questionnaire and a focus group interview. The questionnaire results presented information regarding the integration of information literacy. The results of the study have sufficiently answered the key research questions. Chapter 5 which comprises a discussion of the findings above, follows.

CHAPTER 5

DISCUSSION OF FINDINGS

5.1 Introduction

The findings based on the data that was collected from the online survey questionnaire and the focus group interview were documented in Chapter 4. The first year students from the Departments of Management, Marketing, Public Relations and Retail who were part of the information literacy (IL) programme in 2015, participated in the online questionnaire survey. Six students who were available and willing, participated in the focus group interview. In addition to the students, the subject librarians at the Durban University of Technology (DUT) who were involved in the teaching of information literacy and lecturers who worked together with the subject librarians with integrated assignments, participated in the online questionnaire survey. This section discusses the findings which are relevant to the key research questions which in turn underpinned the study. The key research questions are:

1. What has been the impact of IL integration on students?
2. What were the challenges experienced?
 - Has there been enough support from the academic departments?
 - What were the challenges of IL integration in terms of facilities and resources?
 - What ways did the digital divide impact on the teaching of first year students?
3. What can be done to improve the teaching of IL?

5.2 Discussion of findings

The findings from the groups of respondents are discussed with reference to the key research questions mentioned above. Broad headings derived from the key research questions provide a basis for the discussion.

5.2.1 Impact of information literacy integration

As outlined in the Literature review (Chapter 2) integrating information literacy, research skills and information resources into the curriculum by making use of course assignments while teaching information literacy enhances critical thinking, academic success and lifelong learning. The information literacy programme at the DUT Library aims to promote excellence in teaching information literacy, information resources and research strategies to all students. The training programme was designed to help students prepare for curricular requirements and to instil in them independent lifelong learning skills.

5.2.1.1 Impact of information literacy integration - students' perspective

Out of 327 students that attended the information literacy classes, 177 participated in the online survey questionnaire with a response rate of 54%. Students surveyed were from specific departments of the Management Sciences Faculty with a response rate of 34% from the Marketing Department, 28% from the Public Relations Department, 22% from the Retail Department and 15% from the Management Department. Out of the 177 students, 86% were African, 11% were Indian, 2% were Coloured and 0.57% was White, while the female students outnumbered the male students with 55% and 45%, respectively.

African students dominated the information literacy classes with the majority of them being female. From the online survey questionnaire, a majority of students, 111 (63%) indicated that the integration of information literacy, that is, by the subject librarian making use of course assignments while teaching, made a positive impact on their learning. However, 30 (17%) students indicated that the integration of information literacy did not make a positive impact and 35 (20%) indicated that they were not sure of whether the integration of information literacy made a positive impact on their learning.

Students who agreed that the integration of information literacy made a positive impact on their learning pointed out that they found it much easier to search for and find information for their assignments. As McGuiness (2006: 573) and Young (2008: 139) pointed out, information skills are best learned when students can relate to them in terms of integrating these skills with their assignments, making the process meaningful. It is interesting to note that students who answered the online questionnaire regarding the integration of information

literacy were of a similar view when they indicated that because the assignments that were used in the information literacy classes were from their coursework subjects, they could relate to them and this made what was being taught in the information literacy classes in terms of finding information for assignments and referencing them, more meaningful and understandable. Students were of the opinion that without the use of the course assignments, they would have found the classes tedious and irrelevant. They also acknowledged that they would have struggled otherwise to find crucial and relevant information for their assignments. This type of integration is stipulated by Andretta (2005: 6) in Chapter 2 of the literature review that information literacy has evolved from basic orientation to fully integrated coursework modules.

Students also pointed out that they were able to search for and find relevant academic sources and were taught how to critically evaluate information from the internet and this coincides with the views of Emmons (2009: 143) who asserts in the literature (Chapter 2) that the role of the librarian in academic institutions is to provide students access to scholarly resources and to assist them to find, evaluate and use resources. Behrens (1994: 316) is also of the opinion that understanding and evaluating information are higher order critical thinking skills that are essential for information literacy programmes. Some students indicated that they did not know how to reference before the information literacy classes and that they were not aware of in-text referencing until they attended the information literacy classes while others indicated that they learnt how not to plagiarise. They further pointed out that they were taught how to reference correctly and this led to the realisation that their referencing skills had improved.

What also emerged from the findings was the important role played by the subject librarians involved. In this regard, students stated that with integration, the subject librarians were always at hand to assist during classes, knew where assistance was most needed and ensured that their (the students) information related activities namely, their assignments, remained focused. This resulted in them having more confidence in their abilities to find and identify appropriate academic information for their assignments. Those who have never used computers or the internet before, alluded that the classes were of value to them and that they were able to apply what was learnt in class to assignments and projects. As outlined by Eisenberg, Lowe and Spitzer (2004: 139) as well as Jiyane and Onyancha (2010: 11) information literacy should be embedded and integrated into the coursework of students' academic curriculum. This will bring about new ways of teaching and learning thus improving students' information learning skills.

This interaction and integration resulted in the students having more confidence in their abilities to find and identify appropriate academic information sources.

In the focus group interview, it was mentioned by some students that they needed more help because they did not know how to use the computer, citing no previous computer experience as a reason. These students added that they should be given computer classes before attending the information literacy classes. They also indicated that the librarian was sometimes too fast in the training.

Students also stated that the integrated information literacy classes contributed positively to both their Duly Performed (DP) and final exam mark and that their assignment marks improved considerably after the information literacy classes. Lockhart (2015) confirms that this type of intervention is the most valuable approach because the experience becomes real as they apply the information literacy skills that they learn directly to their assignments with the help of the subject librarians.

From the results it can be concluded that the integration of information literacy with first year programmes was a reasonably successful initiative given that 63% of students agreed that it had a positive impact on their learning. The discussion above also lends credence to this conclusion. As McGuinness (2006: 573) and Young (2008: 139) point out, information skills are best learned when students can relate to them in terms of integrating these skills with their assignments, making the process meaningful.

5.2.1.2 Impact of information literacy integration - lecturers' perspective

From the ten academic staff members who were involved with the information literacy interventions, all ten participated in the survey with six being lecturers, two senior lecturers, one HOD and one from the "Other" group. The "Other" group referred to respondents who were part of any other designation other than those that were part of the options given. Four of the ten were in possession of a PhD qualification, five with a Masters qualification and one with a BTech qualification. They all indicated that they had more than 11 years' experience in their current positions while 80% had between two and five years' experience with information literacy and 20% had between six and ten years' experience in information literacy interventions.

As pointed out by Ojedokun (2007: 26); De Jager and Nassimbeni (2005: 34); (Behrens 1994:319) and Harrison and Rourke (2006: 605) it is important for collaborative efforts between the library and academic departments. They are all in agreement that the partnership in the teaching and learning process between academics and the library strengthens the links between information literacy, graduate skills and lifelong learning. Collaboration between the academic departments and the library is of vital importance to the success of an information literacy programme and subject librarians should create strong partnerships with lecturers for successful information literacy teaching to take place. Lecturers were asked whether the liaison with the subject librarians worked well when integrating information literacy into the curriculum. All ten lecturers indicated that the liaison between the subject librarians and themselves worked very well and that this good working relationship is an important element in an integrated information literacy programme. They added that there was consultation with the subject librarians before the course subject guide was designed for the Management, Marketing, Retail and Public Relations courses. Stritmatter (2012: 96) is of the view that there needs to be collaborative conversations between librarians and Faculty about how to blend course learning objectives with information literacy concepts. Many universities measure students' information literacy skills by using assessment techniques such as pre and post-tests. Stritmatter (2012: 96) believes very strongly that effective library instruction of any kind is not done in isolation and that collaborating with Faculty on assignments and learning objectives leads to successful information literacy sessions. It is imperative that librarians work actively with Faculty to design meaningful research assignments and in this particular study by Stritmatter (2012: 96) the concerned librarian and faculty met throughout the semester to ensure that students were in possession of the information that they needed for their assignments. In the present study, the lecturer's responses from the questionnaire alluded to the fact that collaboration with subject librarians and lecturers was crucial and that both parties were cooperative in making the information literacy integration initiative a success.

Lecturers indicated that it was crucial to consult with the subject librarians before setting a resource based assignment to ensure that relevant course material would be accessible and the learning process a positive one for the students. The subject librarians were provided with copies of reading lists, assignments and updated course descriptions so that there was access to appropriate materials on an ongoing basis to provide better reference and instructional service to the students. Ninety percent of the lecturers indicated that the integrated assignments were set out formally in the study/learner guide. Lecturers indicated that students were given assignments which they had to complete with the assistance of the

subject librarians.

At DUT, before the start of the information literacy classes, subject librarians and lecturers were involved in meetings to strategise how the classes would unfold. Subject librarians requested course assignments to be used in the information literacy classes. Together subject librarians and lecturers set timetables and assignments, tests and exercises. Consultation and cooperation was ongoing until tests were written and submitted to the lecturers. Subject librarians were constantly in consultation with lecturers about students' attendance, students' progress, venues, assignments and tests. Lecturers were very pleased with the subject librarians' expertise and experience and indicated that the subject librarians' time spent with their students was invaluable and very much appreciated. When asked whether by using integrated assignments this indicated good practice and whether it made a positive impact on students learning, 80 percent of lecturers indicated that using the integrated assignment made a positive contribution to student performance. Students showed improvement in their writing skills in their assignment submission. There was also an improvement in the quality of the assignments in terms of the information that was researched. Lecturers were asked to indicate whether by students attending the integrated information literacy classes, they were able to reference their assignments correctly. They explained that students were better equipped after they attended the information literacy classes and that they were able to apply their knowledge and skills learnt in the information literacy classes to their written coursework assignments and were referencing better than previously.

Whereas eight (80%) of the respondents indicated that students were able to reference their assignments correctly after the integrated information literacy classes, two out of six lecturers (33%) indicated that some students' referencing were 100% correct but that this had to do with the amount of effort that they put into attending the information literacy classes. Two (20%) of the respondents were uncertain as to whether students were able to reference correctly after the classes. They noted that students still had to be reminded about referencing on an ongoing basis because they performed better in their assignments only while attending the information literacy classes and once the classes were over they seemed to forget and struggled. A point was made that a handful of students failed to take the information literacy classes seriously.

The information literacy marks from the assignments and tests are credit bearing and contributed to the students DP and overall mark and the disinterest of some students became a serious issue because it impacted on their DP marks. As indicated in the literature review,

the Association of College and Research Libraries (2000), it is crucial for an assessment programme to be designed by librarians and academics together so that areas for further development can be found. At DUT, formative and summative assessments were used by making use of class exercises, assignments, tests and examinations and these have proven to be valuable methods of assessment. The information literacy programme designed by the library at DUT has been an active programme for many years. This is echoed by Mackey and Jacobson (2010: xiii) who is of the view that it is a good idea to assess new courses at the beginning of a project rather than at the end so that feedback can be gathered and used to identify gaps where students are struggling and librarians can adjust their teaching accordingly. The assessment of teaching and learning at a university is essential and an important part of instruction and students need to know how to think critically. Students demonstrating their understanding of a subject matter is critical to the learning process and it is essential to evaluate whether the aims, goals and objectives of a lesson have been met.

Lecturers indicated that students were able to write better assignments, there was evidence that their assignments were of a higher standard and a concerted marked overall improvement was noted. According to lecturers, students expressed that trying to learn the skills of information literacy in isolation does not provide any relevance and that alone does not motivate them to attend the classes therefore the integrated classes kept them motivated. They further pointed out that students were able to draw the link between information literacy and the course assignments. Lecturers felt that students benefited with regard to information required for the actual assignment as well as the assistance they received on how to identify key topics and questions that required answering. They felt that students and the subject librarian had a common goal to work towards and this focused the training and provided concrete guidelines for them. This is in line with what Sayed and De Jager (1997: 9) believe that the teaching of information literacy skills should be firmly embedded in students' coursework in order for them to see it as being meaningful. This is also in line with what Moselen and Wang (2014: 1) view that integration could be achieved through an assignment related approach taking into account the practical aspects of integration. They decree that both lecturers and subject librarians are responsible for making sure that information literacy is integrated into the curriculum. Lecturers added that students made an improved effort by using the knowledge that they gained on accessing information and the integrated assignments also contributed to improved writing skills. The standard of the work presented was higher than before and it was noticed that students were able to evaluate the trustworthiness of sources that they consulted with.

The objective of the integrated information literacy training is to ensure that students are able to recognise the need for information, locate and retrieve information, evaluate information and use information responsibly. Lecturers' were asked to indicate, from their experience, whether they believe that the objective of the training was being met. Ninety percent (9) of the lecturers indicated that the objective of the training was met while one lecturer said that the objective was being met to some degree but did not elaborate further.

Information literacy skills are best learnt when they are developed within the context of a programme or discipline. Academic staff have therefore insisted on an assessment from the library at the end of the information literacy interventions in order for students to see the relevance. As the assessment formed part of the integration at course level, it was essential to include information literacy outcomes in the assessment criteria. This encouraged students to perform at a certain level to demonstrate their information literacy knowledge and skills.

5.2.1.3 Impact of information literacy integration - subject librarians' perspective

Out of the six full time - librarians, four were subject librarians, one was a post graduate librarian and one was a cataloguing librarian. Their qualifications ranged from a Bachelor of Technology, Honours and a Masters degree with eleven to twenty five years' experience between them as professional librarians. The numbers of years of teaching information literacy ranged from one to more than ten years' experience. All librarians answered the online questionnaire in the capacity of subject librarians as they were in that position when the online survey was administered. All subject librarians (100%) who answered the online questionnaire indicated that the impact of information literacy integration on students was positive.

Subject librarians pointed out that using the integrated assignments made the students understand their assignments better and that they could relate to what was being taught and as a consequence, students found the classes useful and meaningful. In addition, it was noted that many students learned how to master new technologies and skills to survive in the information age.

According to subject librarians, at the end of the information literacy classes, a majority of students were better equipped to find and locate information on their own and there was a marked improvement in their referencing. This was noticeable in their assignment writing.

Students were able to develop the skills and strategies they needed to become active participants in the learning process and were able to think critically and creatively. They learned to employ effective strategies to collect, interpret and evaluate information. The classes helped students understand the process of locating and acknowledging information. As outlined in the literature, this coincides with Eisenberg, Lowe and Spitzer (2004: 6) and Behrens (1994: 316) who are of the opinion that when teaching information literacy, students need to be taught to “discriminate, select and analyse” information which extends to critical thinking and the ethical use of information. Information literacy is crucial for responsible citizenship which can improve the attempts at educational transformation in producing independent lifelong learners. Subject librarians added that because the information literacy classes were so well integrated, students did not view it as a separate subject and indicated that they appreciated the usefulness of the training.

The classes allowed teaching to be both theoretical and practical enabling a better understanding and learning experience. This helped to improve the quality of work done through “putting what was taught into practice”. They further noted that with the integration, subject librarians made searching for information easier for students than they expected which made the classes much more worthwhile for students in the information literacy class.

According to the findings from the subject librarians, developing the learning module must be accomplished by both the lecturers from the different faculties and themselves (subject librarians) to ensure proper implementation of course integrated information literacy. The situation at DUT thus fits in with higher education institutions, whereby DUT is setting a trend by following other higher education institutions thereby becoming a dynamic model in creating an information literacy culture amongst students. Higher education is relied upon to provide learners with a wide range of skills and knowledge to ensure that students are able to develop critical thinking skills (Lippincott 2005: 1) and DUT has created such an environment with these students. This also coincides with Ojedokun (2007: 27) who believes that integrating information literacy into the curriculum is essential and an excellent way for students to relate to their subject matter.

5.2.2 Challenges experienced

Respondents from all three population groups were asked whether they experienced any challenges during the information literacy training. Subject librarians were asked whether they received enough support from academics and all three population groups were asked

whether they experienced challenges with the digital divide, facilities and resources. The intention here was to ascertain whether the information literacy classes were conducted smoothly or whether there were barriers that may have hindered the smooth running of the information literacy classes.

5.2.2.1 Support from academics – subject librarian perspective

A challenge that exists with information literacy integration is trying to get the support from academic staff and trying to build a collaborative relationship with them to work together as an information literacy team. Ojedokun (2007: 26) and De Jager and Nassimbeni (2005: 34) believe that it is important for collaborative efforts between the library and academic departments. They believe that the partnership in the teaching and learning process between academics and the library strengthens the efforts of integrated information literacy teaching. As emphasised by Behrens (1994: 319) getting collaboration between the academic departments and the library is important for the success of the programme. Therefore, subject librarians should create strong partnerships with academic staff for successful information literacy teaching to take place and this is lacking in most institutions.

At DUT, subject librarians indicated that they received good support from academic departments and that there was excellent liaison with the departments and this type of positive partnership fosters successful students. According to Bajo (2009: 45) in order to achieve successful information literacy results in higher education institutions, it is essential that a pleasant collaboration between subject librarians and academics take place for the good running of the academic institution. This study revealed that the lecturing staff and the subject librarians ensured an excellent and cordial working relationship by constantly working together. Subject librarians received notification of the integrated assignments and coursework material in ample time before the start of the information literacy classes. Subject librarians and lecturing staff worked together to obtain suitable timetable dates to avoid clashes with other subjects and to determine the number of information literacy classes that would be required. Subject librarians had meetings with lecturers from each department to set assignment due dates and test dates. The planning stages for all information literacy classes were time consuming and consisted of a lot of hard work and dedication.

5.2.2.2 Facilities and resources

In each higher education institution, there are facilities and resources that contribute to the teaching and learning process. For learning to take place, students must have the necessary resources and be able to interact with tangible resources.

5.2.2.2.1 Facilities and resources – students' perspectives

Students were asked to indicate whether they experienced any challenges in terms of resources, that is, problems with the computers while attending the information literacy classes. A small number of students (21%) indicated that they did experience problems and a majority (74%) indicated that they did not. These results therefore indicate that during the information literacy classes the computers and network used while teaching and learning took place were in a fairly good working condition. Adeogun (2003: 12) is of the view that there must be proper infrastructure in place for effective teaching and learning to take place.

Students who indicated that they did experience challenges, explained that they sometimes experienced problems with the internet connection and it was sometimes difficult to keep up with the lecturer because of the slow computers. This is an issue to take note of for future information literacy classes. Students were asked whether they experienced any challenges with venues while attending information literacy classes and while there was a vast 85% who indicated that they did not experience challenges, 10% indicated that they did experience challenges with venues. The latter pointed to clashes with classes because of double bookings made by lecturers, as well as, the difficulties experienced in finding venues at the beginning of the semester. They also indicated that at the beginning lecturers sometimes did not inform them of location of venues. It can therefore be gathered from the results that in terms of the facilities and resources at the DUT library, the majority of students (74%) indicated that they did not experience challenges with the resources while there was a majority (85%) indicated that they did not experience challenges with the venues. It can therefore be assumed that there is adequate infrastructure at the DUT library for effective learning and teaching to take place.

5.2.2.2.2 Facilities and resources – lecturers' perspectives

Lecturers were asked to indicate if they experienced problems with resources and four (40%) indicated that venues were a problem in terms of size and the other 60% indicated that venues were not a problem. They indicated that student numbers and time slots had to be

negotiated. Other challenges experienced were that there were not enough venues available for the teaching of large classes. They indicated that subject librarians had to divide students into smaller groups to accommodate them which in turn lead to increased teaching loads and much repetition, for example explaining concepts and demonstrating the library discovery tool, library catalogue and database searches to multiple groups in a course. Lockhart (2015) posits that other ways of addressing the challenge of teaching large classes and not having enough venues to teach is to incorporate emerging technologies such as screencasts and podcasts into the teaching.

5.2.2.2.3 Facilities and resources - subject librarians' perspectives

Subject librarians were asked to express if they experienced challenges during the information literacy classes. One subject librarian indicated that venues were few and that there was sometimes a struggle for venues because of other subject librarians teaching at the same times. A vast majority (83%) indicated that the venues were not a problem. The two library venues that were used for the teaching of the information literacy classes were not big enough to accommodate large groups of students. As noted above, students had to be split up into smaller groups in order to be accommodated in the venues. Lecturers were accommodating and supportive of this and ensured that all students were timetabled in the venues for the various information literacy lessons. Student numbers and timeslots had to be negotiated. This did not present a huge challenge as both subject librarians and lecturers worked together to find solutions. However, the concern of the one subject librarian indicating that there was a shortage of venues needs to be noted and suggests a further investigation into the availability of additional venues for information literacy teaching.

5.2.2.3 The digital divide

Higher education institutions are confronted with the challenge of many students entering university from under-resourced secondary schools. As sketched out in the literature by De Jager and Nassimbeni (2005: 31) many students are introduced to information and communications technology (ICTs) for the first time when they enter university and many universities have no mechanisms or policies in place to deal with these unprepared students. Subject librarians teaching information literacy to first year students are faced with having students from well-resourced and under-resourced schools simultaneously sitting in the same information literacy class and with different ICT abilities. Those who come from well-resourced schools are comfortable in the information literacy classes because they are *au fait* with the ICTs that are used while those that come from the wrong side of the digital divide, that is from

schools that are either poorly resourced with regard to ICTs or have no ICTs at all, struggle to use the computers and to keep up with the subject librarian.

5.2.2.3.1 The digital divide - students' perspectives

From the survey, students' identified the type of areas that they attended high schools in, such as urban or rural and they also identified the types of high schools that they attended based on the resources at their schools. In terms of the findings, 106 (60%) students came from urban schools and 64 (36%) students came from rural schools.

Regarding whether their schools were well resourced or under-resourced, 83 (47%) students believed that their schools were well resourced and they felt comfortable receiving training in the information literacy classes. However, 74 (42%) students indicated that their schools were under-resourced. This is an indication that the information literacy classes that were conducted at DUT comprised of students from both well-resourced and under-resourced schools suggesting a digital divide in the information literacy classroom. It is evident that some of the students were confronting ICTs as learning and information tools for the first time and were thus at a distinct disadvantage (as reflected in the discussion below). De Jager and Nassimbeni (2003: 108) make the crucial point that students are different and thus have different abilities and that this needs to be recognised in the classroom situation.

When students were asked to indicate whether the digital divide had an impact on the training, the majority of students, 109 (63%) agreed that the digital divide, that is, the lack of access for people to information and communication technologies (Internet, Facebook and other social networking applications) did have an impact on the information literacy training at DUT while 34 (20%) indicated that the digital divide did not impact on information literacy training. Thirty one (18%) of the students were not sure whether the digital divide made an impact on information literacy training at DUT. This digital divide would have impacted on the time allocated to the information literacy training with subject librarians having to spend more time with students coming from under-resourced backgrounds. These students would have required more assistance and as a result slowed down the classes. It is evident that the basic education system in South Africa is wanting and has created a digital divide that impacts on students' performance at universities.

However, when students were asked to describe the ways in which the digital divide impacted on the IL training, the vast majority 147 (84%) indicated that it had been easy to

follow the IL training. The findings then suggest that even though students stemmed from rural backgrounds and under-resourced schools and that the digital divide created challenges in the classes, they were still comfortable in the IL class and found the training easy enough to follow. This again points to the success of the information literacy training regardless of these shortcomings.

Twenty five (14%) students pointed out that it was difficult to use the keyboard, mouse and other applications. As a consequence, this would have slowed the rest of the class down in that librarians had to spend time on basic computer training. This view is supported by Chipeta, Mostert and Jacobs (2009: 53) who are of the opinion that the inability of students to operate computers slowed down teaching and this frustrated librarians who had one hour to teach. This needs to be noted for the future and underscores the need for students to be provided with basic computer training before attending the information literacy classes.

When asked to indicate whether they felt comfortable using the library computer system, that is, iLink and Summon, the majority (63%) and 24% of the students felt comfortable and very comfortable, respectively using the library technology which would have made teaching information literacy slightly less of a challenge. It must be noted however, that there was a small percentage (7%) of students who were not comfortable with using the library technology and once more the findings suggest that previous computer experience is necessary for information literacy teaching and learning.

In relation to the question about the level of ICT experience, it is interesting to note that approximately the same percentage of students who indicated that they were "Very experienced" and "Experienced" also indicated in this question that they were "Very comfortable" and "Comfortable" using new technology. This implies that respondents who have the same level of ICT experience have the same level of confidence in using new technology. Again though, there was a small number of students 13 (7%) who considered themselves inexperienced and not comfortable with new technology and this remains a cause for concern.

The digital divide again manifested itself in the responses to the question of whether students felt disadvantaged and experienced problems with the technologies that were used when they began the information literacy classes. While the majority 127 (73%) of students indicated that they did not, there were 18 (10%) who indicated that they did - either being disadvantaged or a little disadvantaged 30 (17%). Two respondents (1%) skipped the question. Once again, this would have impacted on their learning in terms of assistance required.

A significant majority (83%) of students were of the opinion that computer training should be provided prior to the attendance of the information literacy classes. It is evident that students were aware of the negative impact that a lack of ICT knowledge and skills had on the teaching and learning taking place in the class. It was, however, pointed out that the subject librarians did make efforts to combat this problem by allowing the “faster” students to move on to other sections while more time was spent with the students who required more help. It was also pointed out that the students who required more assistance met with the subject librarian at their convenience for extra classes.

Students indicated that it was important to recognise that people have different learning styles which are often based on their cultural background and previous schooling and therefore the modes of teaching in the information literacy classes should be appropriate for different learning groups. It is also important to be conscious of the different learning outcomes and be able to measure the outcomes such as attitudes and values, knowledge and understanding, behaviour and skills appropriately. As outlined by De Jager and Nassimbeni (2002: 168) students attend universities coming from backgrounds of sometimes limited exposure to libraries and information resources and thus lacking information literacy skills, and therefore find it difficult to learn in a challenging technological environment.

From the findings, it is evident that the majority of students that received the training were from well-resourced urban schools (60%), experienced with ICTs (61%) and were comfortable with using the library tools (63%). Sixty nine percent had access to the Internet off campus and 73% did not experience challenges with new technologies. Eighty four percent indicated that the information literacy classes were easy to follow. However, 63% believed that the digital divide does have an impact on training and 83% were of the opinion that computer training for students is essential before they attend the information literacy classes. The results therefore indicated that while a small minority of students were being disadvantaged at some ICT level, the majority of students were able to understand and were comfortable with what and how it was being taught in the information literacy classes.

5.2.2.3.2 The digital divide – lecturers’ perspectives

Nine of the 10 (90%) participating lecturers indicated that the digital divide did play a part in the teaching and learning of information literacy. It therefore did impact on training because students still had problems with using the computers and accessing information and that students with different abilities shared the same information literacy class. The remaining

lecturer was uncertain as to whether the digital divide impacted on information literacy training. Lecturers assumed that those students requiring additional computer skills would be assisted by the subject librarians in class or at a later stage.

Lecturers were asked whether they experienced any challenges with integrating information literacy into the curriculum, that is, did they experience challenges with students being under-prepared in terms of not having the necessary computer skills and/or access to computers. One of the lecturers (10%) indicated that there were challenges experienced with under-prepared students while 6 (60%) indicated that there were no challenges. Three (30%) indicated that there is a wide gap between students that have the skills compared to those who do not have the skills. They also indicated that students' first encounter with technology used at university was not an easy one. This coincides with Attewell (2001: 252) who explains that higher education institutions in South Africa recognise ICT skills as crucial ones for students and regard these skills as an important basic prerequisite. In the South African context, many students enter higher education with little or no exposure to ICT and as a consequence lack the requisite skills. This coincides with Katz (2007: 3) who postulates that regardless of the rapid growth of the internet and other technology, many students at higher education institutions still do not have the necessary ICT and information literacy skills to search for, evaluate and use information.

Lecturers were asked whether they experienced any challenges with students' attendance. Some of them indicated that there was poor attendance in the beginning but that was somewhat rectified once students understood the importance of attending the information literacy classes. Some lecturers pointed out that because class numbers were large and venues were small, timetabling became problematic resulting in classes being offered over longer periods which confused students and they lost track of when to attend. They affirmed that some students skipped the classes because they falsely assumed that they were not compulsory. Lecturers emphasised that it was important to understand that poor attendance was also due to a lack of interest with students that did not have previous computer experience, so they lost interest in attending classes.

5.2.2.3.3 The digital divide - subject librarians' perspective

Subject librarians were asked whether they experienced any challenges with integrating information literacy into the curriculum, that is, did they experience challenges with students being under-prepared in terms of not having the necessary computer skills to access

computers. All six subject librarians (100%) indicated that there were challenges experienced.

Subject librarians pointed out that many students enter university without previous computer experience and this becomes a challenge at university level, with more time being spent with these students to teach computer skills and this adversely affects the stipulated lesson time. The lack of basic computer skills has been noted a number of times above and is in alignment with a report from the Department of Basic Education (2011). Furthermore, and as noted a number of times above, the report posits that many South African schools do not have libraries and computer access for students. Students thus enter universities without computer experience and skills and as a result do not know how to search for information.

As pointed to in the literature by Cullen (2001), the digital divide is considered a gap that is present between students with ICT skills and students without ICT skills. This gap exists in most countries between those who have ready access to the necessary tools of ICTs and the knowledge that ICT provides as compared to those without such access and knowledge. It is important to note that this gap may be due to a range of geographical, educational and socio-economic factors. The findings from the subject librarians support the work of Mutula (2005: 122) who is of the opinion that the digital divide refers to the unfair access to ICT which can be considered in different ways and that the internet is more freely accessible to the developed and developing countries and that many students that enter university from the rural areas have not been exposed to the internet or any form of ICT before.

Higher education institutions in South Africa are faced with the problem of the digital divide concerning ICT because students enter university with problems of not being equipped with computers at home as well as insufficient access to computers at university. The findings of the present study suggest that this is the case at DUT as well. This makes the teaching of the information literacy programme difficult for the subject librarian.

The researcher believes that if an information literacy class has students of mixed abilities, this poses a problem not only to the subject librarian teaching information literacy but to the students who are au fait with computer skills as well. Once again, and as discussed above, it is becoming obvious that previous computer training prior to the attendance of information literacy classes, is essential.

5.2.3 Recommendations for improvement of information literacy

The last of the research questions concerned what could be done to improve the teaching of information literacy at DUT. The findings are discussed below.

5.2.3.1 Students' recommendations

Students were asked to indicate whether the teaching of information literacy could be improved in any way. Thirty eight percent of students indicated that there was no need for the information literacy teaching to be improved, while 31% responded that there was room for improvement and 31% were not sure.

Students who indicated that there should be improvements with the information literacy classes focused on the facilities and resources available. They indicated that the library should have more computers for students and that the internet connection should be stronger. They also pointed out that there should be more information literacy classes for students than what is presently allocated, because not all students are familiar with computers. Some students were of the view that the teaching should be in more detail and that there should be more sessions. They recommended that the information literacy classes should be for all students and not only for first year students. They were also of the view that every first year student should receive the integrated information literacy lessons irrespective of the faculty they were in. They went on to add that classes should not clash with other subject classes which was sometimes the case and that lecturers should ensure that this did not occur. It was also pointed out that students be given computer training prior to the commencement of the information literacy classes as this would ensure that all students understood what was going on and have at least the basic computer skills. As has been emphasised above, this would also ensure that time was not wasted in the classes and that all students would be at the same level of understanding.

5.2.3.2 Lecturers' recommendations

Lecturers recommended that there should be more time slots made available for information literacy teaching and that there should be more venues made available. Lecturers also suggested that there should be more teaching contact time. Other recommendations made by lecturers were that there should be more practice on referencing and evaluating information, more integrated assessments and smaller groups for individual attention especially for those who required more assistance.

5.2.3.3 Subject librarians' recommendations

Subject librarians suggested that the integrated information literacy classes should take place right at the beginning of the semester before the year gets busy. The rationale is that when students get busy with their coursework, there is a tendency to focus more on their coursework than on the library information literacy classes. The librarians also suggested that receiving full support from academic departments and continuing with good relationships would increase student success. Like the lecturers, the subject librarians proposed that more teaching venues should be made available. They also suggested that the classes should be made compulsory for all students because the knowledge and skills they receive from the information literacy sessions were lifelong and could assist them for future studies as well.

5.3 Summary

Chapter 5 discussed the findings of the study, presented in Chapter 4, in relation to the relevant literature. The key research questions underpinning the study provided a basis for the discussion, focusing on the impact of integrated information literacy, the identification of challenges faced and the inclusion of recommendations for the improvement of information literacy. The perspectives of the three population groups, namely, students, lecturers and subject librarians were given in each instance. Chapter 6, the final chapter, follows.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the summary, major findings, conclusions, recommendations and suggestions for further research. The findings presented were from the web-based questionnaires administered on Survey Monkey used to survey first year students from the Faculty of Management Sciences in the Departments of Management, Marketing, Retail and Public Relations at the Durban University of Technology (DUT). Students, lecturers and subject librarians from DUT participated in the study. Findings from the focus group interviews were also presented.

The research questions are listed below, highlighting the purpose of the study which was to assess the integration of information literacy education with first year students from the Faculty of Management Sciences at the Durban University of Technology – Durban Campus. The key research questions were:

- What has been the impact of IL integration on students?
- What were the challenges experienced?
 - Has there been enough support from academic departments?
 - What were the challenges of IL integration in terms of facilities and resources?
 - What ways did the digital divide impact on the teaching of first year students?
- What can be done to improve the teaching of IL?

6.2 Summary of the study

Chapter 1 provided an introduction to the study by presenting the background of the study, an outline of the research problem, rationale of the study, purpose of the study and key questions, definitions of key terms relevant to the study, the broader issues to be discussed, the theoretical framework which outlined the concept of information literacy integration, the key research questions as well as the limitations and delimitation of the study, an outline of the research methodology and an overview of the remainder of the thesis.

The focus of Chapter 2 was a review of the related literature on the integration of information literacy into mainstream programmes. Studies conducted internationally followed by studies done in Africa and South Africa and then studies done at the Durban University of Technology (DUT) were reviewed in this chapter. This chapter highlighted challenges encountered by lecturers, subject librarians and students from various universities in relation to the integration of information literacy.

Chapter 3 presented the research design and methods adopted in the study. The approach that the study employed was a mixed method approach whereby both qualitative and quantitative data were collected. The instruments used were the self-administered questionnaire for students, lecturers and subject librarians to collect information about the integration of information literacy. A focus group interview was used for students to gain more insight into the students' understanding of the integration of information literacy. A pretest of the questionnaire was administered to all three population groups to ensure validity and reliability of the study.

Chapter 4 documents the results of the study. The purpose was to assess the integration of information literacy with the 2015 first year students (currently in their second year in 2016) from the Faculty of Management Sciences at DUT. The results of the study have satisfactorily answered the key research questions above. The quantitative data was analysed and presented using numbers and graphs and the qualitative data was analysed using content analysis and presented in tables by themes. The results collected were from all three population groups (students, lecturers and subject librarians) and data was collected using two instruments. Online web-based questionnaires were used to collect data from students, lecturers and subject librarians. One focus group interview schedule was used to interview students. The findings from each group were presented separately by means of tables and figures.

Chapter 5 presented a discussion of the findings as presented in Chapter 4. The discussions centred on the research questions that the study endeavoured to answer. The key research questions were highlighted once more, as indicated above. The main areas covered in this chapter regarding the integration of information literacy included students experience with information and communication technologies (ICTs), new technology being used, the impact of the digital divide on the information literacy training, the impact of course assignments that were used during the training, the challenges that were experienced with the training as well as challenges experienced with facilities and resources. Recommendations were also provided by each group.

According to students the integration of information literacy made a positive impact on their learning and they found it much easier to search for information for their assignments as the assignments that were used in the information literacy classes were from their coursework subjects. They could relate to them and this made what was being taught more meaningful and understandable.

Lecturers were in agreement that collaboration between the academic departments and the library is of vital importance to the success of an information literacy programme. With reference to assignment submissions, students showed improvement in the quality of their assignments as well as in their writing and referencing skills.

Subject librarians felt that students were better equipped to find and locate information on their own and they also noticed a marked improvement in the referencing of students' assignments. Students were able to develop the skills and strategies they needed to become active participants in the learning process and were able to think critically and creatively.

From the discussions above concerning the impact of the information literacy training, and taking into consideration the responses that were reflected by the students, lecturers and subject librarians, it is apparent that there has been a positive impact of IL integration into the first year academic learning curriculum. According to the findings from the subject librarians, developing the learning module must be done by both subject librarians and the lecturers from the different faculties to ensure proper implementation of course integrated information literacy. As outlined by Lippincott (2005: 1) higher education is assumed to provide learners with a wide range of skills and knowledge to ensure that students are able to develop critical thinking skills and DUT has created such an environment with these students. This also coincides with Ojedokun (2007: 27) who argues that integrating information literacy into the curriculum is essential and an excellent way for students to relate to their subject matter.

6.3 Summary of findings and conclusions

There were substantial conclusions from the survey of the first year students of the Faculty Management Sciences within the Departments of Management, Marketing, Retail and Public Relations as well as lecturers and subject librarians. The conclusions below were drawn from the survey and the focus group interview. The objective of the integrated information literacy training was to ensure that students were able to recognise the need for information, locate

and retrieve information, evaluate information and use information responsibly. The conclusions respond to the key research questions which underpinned the study.

6.3.1 Research question 1: What has been the impact of IL integration on students?

➤ Major findings

The major findings from all three population groups pointed to the fact that the integration of information literacy into the curriculum of academic programmes has been a fairly successful initiative:

- The integrated classes have benefited the 2015 first year students to a large extent and the classes have made searching for relevant academic information for assignments and projects clear and uncomplicated.
- A majority of students indicated that the integrated information literacy classes have improved their referencing skills and that they have learnt effective ways to avoid plagiarism.
- Lecturers indicated improvement in students' assignment presentations as well as the quality of assignments and referencing.
- Subject librarians indicated that students were better equipped at finding relevant information after the classes as compared to when they initially started.
- Students indicated that they have been taught the skills of evaluating information from online sources and have learnt how to select academic information sources.
- Students indicated that the use of course assignments in the information literacy classes made the classes meaningful and as a result made a positive impact on their learning.
- A small number of students indicated that they did not benefit from the training because they either did not have previous computer training or did not find the training easy to follow.

➤ Conclusions Drawn

Arising from the results of the study, it may be concluded that a majority of 111 (63%) 2015 first year students benefited from the integrated information literacy training provided by the subject librarians by making use of course assignments which had a positive impact on their learning.

Students also stated that the classes contributed positively to both their duly performed (DP) and final exam mark and that their assignment marks improved considerably after the information literacy classes.

The small number (17%) of students who indicated that the training did not make an impact on their learning indicated that they needed more help on how to use the computer, citing no previous computer experience as a reason. These students added that they should be given computer classes before attending the information literacy classes.

6.3.2 Research question 2: What were the challenges experienced?

- **Has there been enough support from academic departments?**

- **Major findings**

Subject librarians revealed that the excellent liaison with academic departments had a positive impact on the integration of information literacy training and it is an important ingredient in the integration of information literacy. They further indicated that this kind of support is exactly what is required for an integrated programme to work well.

- **Conclusions Drawn**

From the results it can be concluded that the good working relationship between the lecturers and the subject librarians played a significant role in integrated information literacy and that the support from academics was excellent.

- **What were the challenges of IL integration in terms of facilities and resources?**

- **Major Findings**

- The majority (74%) of students, 60% lecturers and 83% subject librarians indicated that they did not experience challenges with facilities and resources.
 - A small percentage (21%) of students indicated that they experienced challenges with

the internet connection being poor as well as slow computers.

- Students (10%) experienced venue challenges including the difficulty of finding venues at the beginning of the semester (and as a result they got lost).
- Lecturers (40%) and subject librarians (10%) indicated that venues were too few and too small for large classes.

➤ **Conclusions Drawn**

The results conclude that the majority (72%) of the combined population did not experience problems with facilities and resources while teaching and learning took place and that there was adequate infrastructure in place. Thus, the combined population investigated were satisfied with the facilities and resources provided for the classes. However, a small percentage (20%) of the combined population experienced challenge with venues and computers.

▪ **What ways did the digital divide impact on the teaching of first year students?**

➤ **Major findings**

There were major findings with the digital divide from all three population groups:

- Sixty four (36%) students came from rural schools and 74 (42%) of the students surveyed indicated that their schools were under-resourced. In addition 109 (63%) students agreed that the digital divide, that is, the lack of access for some people to information and communication technologies (Internet, Facebook and other social networking applications) did have an impact on the training.
- The 109 students mentioned above believed that sitting in a class with students with mixed abilities regarding ICTs poses a problem for both digitally advantaged and digitally disadvantaged students.
- Twenty five (14%) students pointed out that it was difficult to use the keyboard, mouse and other applications. As a consequence, this would have slowed the rest of the class down in that librarians had to spend time with basic computer training.
- From the results, it is evident that students were aware of the negative impact that a lack of ICT knowledge and skills had on the teaching and learning taking place in the class.
- Nine (90%) of the participating lecturers indicated that the digital divide did play a part in the teaching and learning of information literacy. It therefore did impact on training because students still had problems with using the computers and accessing

information and that students with different abilities sat in the same information literacy class.

- All six subject librarians (100%) indicated that there were challenges experienced in terms of the digital divide and that much effort had to be made to assist students with using the computers and searching for information.

➤ **Conclusions Drawn**

Given the findings above, it can be concluded that the information literacy classes that were conducted at DUT comprised of students from both well-resourced schools and students from under-resourced schools suggesting a digital divide in the information literacy classroom. However, as much as many students pointed out that the digital divide was a problem, they also made it clear from the survey that they were able to follow what was being taught, more especially with the subject librarian's assistance. The researcher believes that if an information literacy class has students of mixed abilities, this poses a problem to the subject librarian teaching information literacy as well as to the students who are au fait with computer skills and once again, as discussed above, it is evident that having computer classes in which basic computer skills are taught before attending the information literacy classes is essential.

6.3.3 Research question 3: What can be done to improve the teaching of IL?

➤ **Major findings**

The last of the research questions concerned what could be done to improve the teaching of information literacy at DUT. The findings are presented below:

- Thirty one percent of students responded that there was room for improvement in terms of the library having more computers for students and that the internet connection should be stronger.
- Students pointed out that there should be more information literacy classes to accommodate those students who entered university without previous computer skills
- The need for students to acquire basic computer knowledge was highlighted. This would ensure that all students would not be disadvantaged in the class where computer skills were needed and not hold back the students who did have such skills and have at least the basic computer skills.
- Lecturers recommended that there should be more time slots made available for information literacy teaching and that there should be more venues made available.

Lecturers also suggested that there should be more teaching contact time.

- Other recommendations made by lecturers were that there should be more practice on referencing and evaluating information, more integrated assessments and smaller groups for individual attention, especially for those who require more assistance.
- Subject librarians suggested that the integrated information literacy classes should take place right at the beginning of the semester before the year gets busy because when students begin with their coursework there is a tendency to focus more on their coursework than on the information literacy classes.
- Subject librarians also suggested that the classes should be made compulsory to all students because the knowledge and skills they receive from the information literacy sessions were lifelong ones.

➤ **Conclusions Drawn**

In order for the teaching of information literacy to be improved, it may be concluded that the library has insufficient venues for the teaching of the information literacy classes as well as an insufficient number of computers. The study has also shown that some students revealed that bandwidth across the campus is a problem. More teaching contact time with students is necessary as is more practice on referencing. There was also an indication of more assessments required. Classes should be at the beginning of the year and they should be made compulsory. Finally, it can be concluded that the unequal familiarity and experience with the use of computers by students before attending the information literacy classes, contributes to a digital divide in the classes. This can be rectified by ensuring that students receive basic computer training before attending the information literacy classes.

6.4 Recommendations of the study

Given the above findings and conclusions, this study makes the following recommendations:

- Subject librarians and lecturers have a complementary role and responsibility to play in the teaching of information literacy and it is essential to ensure that information literacy skills are set in the university curriculum at every level. It is recommended that the integration of information literacy needs to extend beyond the Departments of Management, Marketing, Retail and Public Relations and beyond the Faculty of Management Sciences to other Faculties at DUT. In this regard, meetings should be set up between the Library and staff of these Departments to discuss future planning of information literacy training.

- The integrated classes have benefited students to a large extent and this study recommends that other students be given the opportunity to receive these benefits by extending the training to other Departments and Faculties. In this regard, students who have improved their academic writing and referencing skills because of the training received, are themselves of the view that other students should be given the opportunity to improve their referencing skills.
- The study recommends that the library seeks new ways of finding extra venues for the teaching of the information literacy classes. This may well necessitate library management applying for more funding from DUT Management for the expansion of venues in the Library.
- The study also recommends that ways to increase bandwidth across campus be investigated in order to resolve the issues of slow internet access.
- A final and important recommendation is that students that enter university without computer experience receive basic computer training before attending the information literacy classes, so that the classes can proceed without interruptions of dealing with students that do not have prior computer experience or the necessary computer skills.

6.5 Suggestions for further research

This study assessed the integration of information literacy education into the 2015 first year programmes from the Departments of Management, Marketing, Retail and Public Relations of the Faculty of Management Sciences at DUT. Further studies that could be conducted include:

- The integration of information literacy education into postgraduate courses from all Faculties at DUT
- The integration of information literacy education in other tertiary institutions
- The impact that information literacy education has on academic performance.

6.6 Summary of the chapter

Chapter six presented a summary of the study, the major findings, conclusions, recommendations and suggestions for further studies. The researcher is satisfied that the study fulfilled its intention to assess the integration of information literacy education with the 2015 first year students from the Faculty of Management Sciences at DUT, Durban campus.

Challenges related to the integration of information literacy were identified and recommendations were provided. The results of this study could assist other subject librarians, the Departments within the Management Sciences Faculty and other Faculties in making informed decisions on how best to integrate information literacy into the curriculum, as well to decide what needs to be improved to provide better information literacy training to students.

LIST OF REFERENCES

- Adeogun, M. 2003. The digital divide and university education systems in Sub-Saharan Africa. *African journal of library, archives and information science* (online), 13(1): 11-20. Available: <http://search.ebscohost.com/> (Accessed 14 December 2014).
- Alston, R. 2001. Federal Government Statement on Library and Information Policies. *Australian Library and Information Association* (online). Available: <http://alia.org.au/advocacy/alw/2001/statements/alston.html> (Accessed 15 September 2015).
- American Library Association. 2000. *Information literacy competency standards for higher education* (online). Available: <http://www.ala.org/acrl/standards/informationliteracycompetency> (Accessed 12 August 2015).
- Andretta, S. 2005. *Information literacy: a practitioner's guide*. Oxford: Chandos Publishing.
- Association of College and Research Libraries. 2000. *Information literacy competency standards for higher education* (online). Available: <http://www.ala.org/ala/mgrps/divs/acrl/standards/standards.pdf> (Accessed 21 January 2016).
- Association of College and Research Libraries. 2001. *Information literacy competency standards for higher education* (online). Available: <http://www.ala.org/ala/mgrps/divs/acrl/standards/standards.pdf> (Accessed 21 January 2016).
- Association of College and Research Libraries. 2016. *Information literacy competency standards for higher education* (online). Available:

<http://www.ala.org/ala/mgrps/divs/acrl/standards/standards.pdf> (Accessed 21 January 2016).

Attewell, P. 2001. Comment: the first and second digital divides. *Sociology of education* (online), 74 (3): 252-259. Available: <http://www.jstor.org/stable/2673277> (Accessed 21 September 2015).

Babbie, E. 2010. *The practice of social research*. 12th ed. Wadsworth: Cengage Learning.

Babbie, E. and Mouton, J. 2001. *The practice of social research*. Cape Town: Oxford University Press Southern Africa.

Bajo, M.G. 2009. Liaison between librarians and lecturers regarding information literacy: a case study of some academic libraries. *Estudios Sobre Education* (online), 17: 45-61. Available: <http://web.a.ebscohost.com> (Accessed 21 April 2016).

Baker, K. 2013. *Information literacy and cultural heritage: developing a model for lifelong learning*. Oxford: Chandos Publishing.

Baro, E. 2011. A survey of information literacy education in library schools in Africa. *Library review* (online), 60 (3): 202-217. Available: <http://www.emeraldinsight.com> (Accessed 21 March 2016).

Baro, E., Seimode, F.D. and Godfrey, V. 2013. Information literacy programmes in university libraries: a case study. *Libri* (online), 63 (4): 282-294. Available: <http://www.degruyter.com/> (Accessed 21 March 2015).

Behrens, S.J. 1993. User education at tertiary level: a review of recent literature. *South African journal of library and information science*, 61 (3):124 - 129.

Behrens, S.J. 1994. A conceptual analysis and historical overview of information literacy. *College and research libraries* (online), 55 (4): 308-322. Available: <https://www.ideals.illinois.edu/bitstream/handle> (Accessed 12 August 2015).

Bertram, C. and Christiansen, I. 2014. *Understanding research: an introduction to reading research*. Pretoria: Van Schaik.

Blair, J., Czaja, R. and Blair, E. 2014. *Designing surveys: a guide to decisions and procedures*. 3rd ed. Los Angeles: Sage.

Bless, C., Higson-Smith, C. and Kagee, A. 1995. *Fundamentals of social research methods: an African perspective*. 2nd ed. Lusaka: Juta.

Bless, C., Higson-Smith, C. and Kagee, A. 2006. *Fundamentals of social research methods: an African perspective*. 4th ed. Lusaka: Juta.

Breivik, P.S. 2005. 21st century learning and information literacy. *Change: the magazine of higher learning* (online), 37 (2): 21-27. Available: <http://www.tandfonline.com/doi/pdf> (Accessed 13 August 2015).

Bruce, C.S. 1997. The relational approach: a new model for information literacy. *New review of information and library research*, 3: 1-22.

Bruce, C. 2001. Faculty-librarian partnership in Australian higher education: critical dimensions. *Reference services review*, 29 (2): 106-115.

Bruce, C. 2002. The U.S. National Commission on Libraries and Information Science: information literacy as a catalyst for educational change: a background paper. Prague: Czech Republic (online). Available: <http://www.nclis.gov/libinter/infolitconf&meet/paper/bruce-fullpaper.pdf> (Accessed 21 August 2015).

Bruce, C. 2004. Information literacy as a catalyst for educational change: a background paper. In Danaher, P. ed. *International lifelong learning conference*. Queensland. 13-16 June 2004. Yeppoon: Queensland University of Technology, 8-19.

Bruce, C. 2011. Information literacy programs and research: an international review. *The Australian library journal* (online), 49 (3). Available: <http://www.tandfonline.com/doi/pdf/10.1080/00049670.2011.10722652> (Accessed 21 September 2015).

Bundy, A. (ed.) 2004. *Australian and New Zealand information literacy framework: principles, standards and practice*. Adelaide: Australian and New Zealand Institute for Information Literacy.

Bury, S. 2011. Faculty attitudes, perceptions and experiences of information literacy: a study across multiple disciplines at York University, Canada. *Journal of information literacy*, 5 (1): 45-64.

Chipeta, G., Mostert, J. and Jacobs, D. 2009. Teaching and learning of information literacy in some selected institutions of higher learning in KwaZulu-Natal and Malawi. *South African journal of Libraries and Information Science* (online), 75 (1): 46-57 Available: <http://reference.sabinet.co.za> (Accessed 1 April 2015).

Christiansen, L., Stombler, M. and Thaxton, L. 2004. A report on librarian-faculty relations from a sociological perspective. *Journal of academic librarianship* (online), 30 (2): 116-121. Available: <http://dx.doi.org/10.1016/j.acalib.2004.01.003> (Accessed 14 March 2016).

CONUL 2011. *Integration information literacy into the curriculum* (online). Available: <http://www.conul.ie/> (Accessed 6 December 2016).

Cooney, M. 2005. Business information literacy instruction. *Journal of business and finance librarianship*, 11: 3-25.

Corrall, S.M. 2007. Benchmarking strategic engagement with information literacy in higher education: towards a working model. *Information research* (online), 12 (4): 328-37. Available: <http://InformationR.net/ir/12-4/paper328.html> (Accessed 10 March 2016).

Cresswell, J.W. 2015. *A concise introduction to mixed methods research*. London: Sage.

Cresswell, J.W. and Clark, V.L.P. 2011. *Designing and conducting mixed methods research*. 2nd ed. London: Sage.

Cullen, R. 2001. Addressing the digital divide. *Online information review* (online), 25 (5): 311-320. Available: <http://www.emerald-library.com/ft>. (Accessed 12 September 2015).

Davies, M.B. 2007. *Doing a successful research project: using qualitative or quantitative methods*. New York: Palgrave.

De Jager, K. and Nassimbeni, M. 2002. Institutionalizing information literacy in tertiary education: lessons learned from South African programs. *Library trends* (online), 51(2): 167-184. Available: <http://search.epnet.com>. (Accessed 22 August 2015).

De Jager, K. and Nassimbeni, M. (2002a). Can they and do they: exploring information literacy tuition in South African tertiary institutions. *LIASA Conference 2002: Revitalising and creating a vibrant library world in the 21st century*. Port Elizabeth, 30 September-4 October

(online). Available: <http://home.ima/inet.co.za/liasa/2002papers.htm> (Accessed 25 January 2016).

De Jager, K. and Nassimbeni, M. 2003. An exploration of the current status of information literacy tuition in South African tertiary institutions and proposals for curriculum design. *South African Journal of Library and Information Science* (online), 69 (2): 108-114. Available: <http://web.a.ebscohost.com/ehost/pdfviewer> (Accessed 23 September 2015).

De Jager, K. and Nassimbeni, M. 2005. Information literacy and quality assurance in South African higher education institutions. *Libri* (online), 55: 31-38. Available: <http://www.librijournal.org/pdf/2005-1pp31-38-pdf>. (Accessed 23 August 2015).

De Jager, K., Nassimbeni, M. and Underwood, P.G. 2007. South Africa. In: Lau, J. ed. *Information literacy: an international state-of-the art report*. 2nd draft (online). Available: http://www.uv.mx/usbi_ver/unesco (Accessed 14 April 2015).

De Jager, K., Nassembeni, M. and Underwood, P.G. (2007a). Libraries, literacies and learning: retrospect and prospects. In: Bothma, T. J. D., Underwood. P. G. and Ngulube, P. eds. *Libraries for the future: progress and development of South African libraries*. Pretoria, Library Information Association of South Africa (LIASA): 133-147.

Denscombe, M. 2010. *The good research guide for small-scale social research projects*. 4th ed. Maidenhead: McGraw-Hill.

Department of Basic Education (South Africa). 2011. 2011 school infrastructure report (online). <http://www.education.gov.za/>. (Accessed 3 March 2015).

De Vos, A.S., Strydom, H., Fouche, C.B. and Delpont, C.S.L. 2011. *Research at grassroots: for the social sciences and human service professions*. 4th ed. Pretoria: Van Schaik.

Doyle, C. 1992. *Outcome measure for information literacy within the national educational goals of 1990. Final report to the national forum on information literacy*. Flagstaff: AZ, NFIL (online). Available: <http://eric.ed.gov> (Accessed 5 May 2015).

Du Plooy-Cilliers, F., Davis, C. and Bezuidenhout, R. 2014. *Research matters*. Cape Town: Juta.

Durban University of Technology Academic Strategic Plan 2005. 2010 – 2014 (online). http://ddt72ar9zv4px.cloudfront.net/wp.content/uploads/6636/DUT_Annual_Report_2005.pdf (Accessed 23 April 2015).

Eisenberg, M.B. 2008. *DESIDOC. Journal of library and information technology*, 28 (2): 39-47.

Eisenberg, M. and Berkowitz, R. 1990. *Information problem solving: The big six skills approach to library and information skills instruction* (online). Available: <http://eric.ed.gov/?id=ED330364> (Accessed 12 September 2015).

Eisenberg, M., Lowe, C.A. and Spitzer, K.L. 2004. *Information literacy: essential skills for the information age*. 2nd ed. Westport: Libraries Unlimited.

Emmons, M. 2009. Teaching information literacy skills to prepare teachers who can bridge the research-to-practice gap. *Reference and user services quarterly* (online), 49 (2): 140-150. Available: <http://www.jstor.org> (Accessed 29 September 2015).

Fain, M. 2011. Assessing information literacy skills: development in first year students, a multi-year study. *Journal of academic librarianship*, 37(2): 109-119.

Fink, A. 2009. *How to conduct surveys: a step by step guide*. 4th ed. Los Angeles: Sage.

Fink, A. 2017. *How to conduct surveys: a step by step guide*. 6th ed. Los Angeles: Sage.

Floyd, D., Colvin, G. and Bodur, Y. 2008. A faculty-librarian collaboration for developing information literacy skills among preservice teachers. *Teaching and teacher education*, 24 (2): 368-376.

Fourie, I. and Van Niekerk, D. 2001. Follow-up on the use of portfolio assessment for a module in research information skills: an analysis of its value. *Education for information*, 19: 107-126.

Fowler, F.J. 2014. *Survey research methods*. 5th ed. Los Angeles: Sage.

General education programme. 2011. Available:
<http://www.uic.edu/depts/oa/gened/purpose.html> (Accessed 16 June 2016).

Goddard, W. and Melville S. 2001. *Research methodology: an introduction*, 2nd ed. Lansdowne: Juta.

Gorman, G.E. and Clayton, P. 1997. *Qualitative research for the information professional: a practical handbook*. London: Library Association Publishing.

Gross, S. and Latham, D. 2007. Attaining information literacy: an investigation of the relationship between skill level, self - estimates of skill and library anxiety. *Library and information science research* (online), 29 (3): 332-353. Available:
<http://www.sciencedirect.com> (Accessed 15 April 2015).

Harrison, J. and Rourke, I. 2006. The benefits of buy-in: integrating information literacy into each year of an academic program. *Reference services review* (online), 34 (4): 599-606. Available: <http://www.emeraldinsight.com> (Accessed 12 March 2015).

Hart, G. and Davids, H. 2010. Challenges for information literacy education at a university of technology. *Innovation* (online), 41: 24-41. Available: <http://repository.uwc.ac.za/xmlui/bitstream/handle/10566/440/HartInformationLiteracyEducation2010.pdf?sequence=1> (Accessed 14 March 2016).

Hartmann, E. 2001. Understanding of information literacy: the perception of first year undergraduate students at the University of Ballarat. *Australian academic and research libraries*, 32 (1): 53-60.

Ivankova, N.V., Creswell, J.W. and Clark, V.L.P. 2007. Foundations and approaches to mixed methods research. In Maree, K. ed. *First steps in research*. Pretoria: Van Schaik. Pp.253-282.

Jiyane, G.V. and Onyancha, O.B. 2010. Information literacy education and instruction in academic libraries and LIS schools in institutions of higher education in South Africa. *South African journal of libraries and information science* (online), 7(1): 11-23. Available: <http://reference.sabinet.co.za> (Accessed 21 January 2015).

Johnston, B. and Webber, S. 2003. Information literacy in higher education: a review and case study. *Studies in higher education* (online), 28 (3): 335-52. Available: <http://www.tandfonline.com> (Accessed 12 January 2015).

Katz, I.R. 2007. Testing information literacy in digital environments: ETS's iSkills assessment. *Information technology and Libraries*, 26 (3): 3-12.

Kavulya, J.M. 2003. Challenges facing information literacy efforts in Kenya: a case study of selected university libraries in Kenya. *Library management* (online), 24(4/5): 216-222. Available: <http://www.sciencedirect.com>. (Accessed 24 March 2015).

King, N. and Horrocks, C. 2010. *Interviews in qualitative research*. London: Sage.

Kirkwood, P. 2011. Shaping the curriculum: the power of a library's digital resources. *Computers in libraries*, 31(4): 6-10.

Leedy, P. 1997. *Practical research: planning and design*. 6th ed. Upper Saddle River, New Jersey: Merrill Prentice Hall.

Leedy, P. and Ormrod, J. 2013. *Practical research: planning and design*. 10th ed. Harlow, Essex: Pearson Education.

The Library and Information Services (LIS) Transformation Charter of the National Council for Library and Information Services (online). 2009. Available: <http://www.dac.gov.za/sites/default/files/Transformation%20charter-6th%20draft-22102009.pdf> (Accessed 2 February 2015).

Library and information services transformation charter (online). 2014. Available: http://www.nlsa.ac.za/Downloads_01/2014_Final_LIS_Transformation_Charter.pdf - (Accessed 1 March 2015).

Lippincott, J.K. 2005. Net generation student and libraries. *Educause review: transforming education through information technology* (online), 1(8): 14-24. Available: <http://www.educause.edu/educatingthenetgen> (Accessed 21 August 2015).

Lockhart, J. 2015. Increasing library value for users by registering a short course in information literacy. In *Proceedings of the IATUL*. Hanover, Germany, 2015, 2-6. Available: <http://docs.lib.purdue.edu/iatul/2015/lil> (Accessed 2 February 2016).

Lonka, K. 2012. Engaging learning environments for the future: the 2012 Elizabeth W. Stone Lecture. In: Gwyer, R., Stubbings, R. and Walton, G. eds. *The road to information literacy: librarians as facilitators of learning* Berlin: Saur, International Federation of Library Associations (IFLA publication; 157), 15-29.

Lwehabura, M.J. and Stilwell, C. 2008. Information literacy in Tanzanian universities: challenges and potential opportunities. *Journal of librarianship and information science* (online), 40: 179-191. Available: <http://lis.sagepub.com> (Accessed 4 April 2015).

Mackey, T.P. and Jacobson, T.E. 2010. *Collaborative information literacy assessments: strategies for evaluating teaching and learning*. New York: Neal-Schuman Publishers.

Marshall, C. and Rossman, G.B. 2006. *Designing qualitative research*. 4th ed. London: Sage.

McGuinness, C. 2006. What faculty think: exploring the barriers to information literacy development in undergraduate education. *Journal of academic librarianship* (online), 32(6): 573–582. Available: <http://www.sciencedirect.com> (Accessed 24 March 2015).

Meade, P. H. 1998. *A guide to benchmarking*. Otago: University of Otago.

Moselen, C. and Wang, L. 2014. Integrating information literacy into academic curricula: a professional development programme for librarians at the University of Auckland. *The journal of academic librarianship*, 40 (2): 116-123.

Mouton, J. 2003. *How to succeed in your master's and doctoral studies: a South African guide and resource book*. Pretoria: Van Schaik Publishers.

Mutula, S.M. 2005. Peculiarities of the digital divide in sub-Saharan Africa. *Program: electronic library and information systems* (online), 39 (2): 122-138. Available; <http://www.emeraldinsight.com/0033-0337.htm>. (Accessed 1 April 2016).

Mutula, S.M., Wamukoya, J. and Zulu, S. 2004. Report of DLIS subcommittee on extent of information literacy integration within the library and information studies academic Programs, DLIS University of Botswana, Gaborone.

Naidoo, S. and Raju, J. 2012. Impact of the digital divide on information literacy training in a higher education context. *South African Journal of Libraries and Information Science* (online), 78(1): 34-77. Available: <http://reference.sabinet.co.za> (Accessed 21 March 2015).

Neuman, W.L. 2011. *Social research methods: qualitative and quantitative approaches*. 7th ed. Boston: Pearson.

Nieuwenhuis, J. 2007. Introducing qualitative research, In Maree, J. ed. *First steps in research*. Pretoria: Van Schaik Publishers. Pp.46-68

Ojedokun, A. A. 2007. *Information literacy for tertiary education students in Africa*. Ibadan: Third World Information Services.

O' Leary, Z. 2010. *The essential guide to doing your research project*. London: Sage.

Olsen J.K, Coons, B. 1989. Cornell University's information literacy program. *Coping with information illiteracy: bibliographic instruction for the information age*, GE Mensching and TB Mensching eds, Ann Arbor MI: Pieran Press, 7-20.

Open University. 2016. *Information and Communication Technologies* (online). 2016. Available: <http://www.open.edu/openlearn/science-maths-technology/computing-and-ict/information-and-communication-technologies> (Accessed 21 November 2016).

Oppenheim, A.N. 1992. *Questionnaire design, interviewing and attitude measurement*. Continuum: London.

Ornstein, M. 2013. *A companion to survey research*. London: Sage.

Powell, R. R. 1997. *Basic research methods for librarians*. 3rd ed. Greenwich, Conn: Ablex.

Rader, H.R. 2002. Library instruction and information literacy – 1999. *Reference services review* (online), 28(4): 378-399. Available: <http://www.emerald-library.com>. (Accessed 21 July 2016).

Rader, H.B. 2002. Information Literacy 1973-2002: a selected literature review. *Library trends*, 51 (2): 242.

Rockman, I.F. 2004. *Integrating information literacy into the higher education curriculum: practical models for transformation*. San Francisco: Josey Bass.

Rosnow, R. and Rosenthal, R. 2013. *Beginning behavioural research: a conceptual primer*. 7th ed. Boston: Pearson.

Salinas, R. 2003. Addressing the digital divide through collection development. *Collection building* (online), 22(3): 131-136. Available: <http://www.emeraldinsight.com/0160-4953.htm> (Accessed 21 September 2016).

Saunders, L. 2009. The future of information literacy in academic libraries: a Delphi study. *Libraries and the academy* (online), 9(1): 99. Available: <https://muse.jhu.edu/> (Accessed 14 July 2016).

Sayed, Y. 1998. *The segregated information highway*. Cape Town: University of Cape Town Press.

Sayed, Y. and De Jager, K. 1997. Towards an investigation of information literacy in South African students. *South African Journal of Library and Information Science*, 65(1): 5-12.

Secker, J. and Coonan, E. 2011. *A new curriculum for information literacy: transitional-transferable-transformational* (online). Available: http://ccfil.pbworks.com/f/emma_report_final.pdf (Accessed 29 June 2016).

Shank, J.D. and Dewald, N.H. 2003. Establishing our presence in courseware: adding library services to the virtual classroom. *Information technology and libraries*, 22 (1): 38-42.

Simon, M. 2011. *Assumptions, limitations and delimitations* (online). Available: <http://dissertationrecipes.com> (Accessed 24 December 2016).

Silverman, D. 2013. *Doing qualitative research*. 4th ed. Los Angeles: Sage.

South African Qualifications Authority (online). 2000. Available: http://www.saga.org.za/docs/pol/2000/curriculum_dev.pdf (Accessed 21 March 2016).

Story-Huffman, R. 2014. *How to integrate information literacy into higher education curriculum* (online). <http://big6.com/pages/lessons/articles/how-to-integrate-information-literacy-into-higher-education-curriculum.php> (Accessed 3 December 2016).

Strittmatter, C. 2012. Developing and assessing a library and instructional module for a core business class. *Journal of business and finance librarianship* (online), 17: 95–105. Available: <http://web.a.ebscohost.com.dutlib.dut.ac.za/ehost/pdfviewer> (Accessed 22 December 2015).

Stubbings, R. and Brine, A. 2003. Reviewing electronic information literacy training Packages. *Innovations in teaching and learning in information and computer science* (online), (1). Available: <http://ics.heacademy.ac.uk/italics/issue1/stubbings/stubarev.pdf> (Accessed 15 March 2016).

Tiemensma, L. 2012. Information literacy education in higher education institutions in South Africa. In: Gwyer, R., Stubbings, R. and Walton, G. eds. *The road to information literacy: librarians as facilitators of learning*. Berlin: Saur, International Federation of Library Associations (IFLA publication; 157), 155-168.

Wang, L. 2011. An information literacy integration model and its application in higher education. *Reference services review*, 39 (4): 703-720.

Williams, A. 2003. How to write and analyse a questionnaire. *Journal of orthodontics* (online), 30(3): 245-252. Available: <http://www.tandfonline.com> (Accessed 15 February 2016).

Winterbottom, S. 2007. Virtual lecturing: delivering lectures using screen casting and podcasting technology. *Planet* (online). (18): 6–8. Available: <http://doi.org/10.11120/plan.2007.00180006> (Accessed 21 January 2016).

Wisker, G. 2001. *The postgraduate research handbook: succeed with your MA, MPhil, EdD and PhD*. 2nd ed. New York: Palgrave.

Wisker, G. 2008. *The postgraduate research handbook: succeed with your MA, MPhil, EdD and PhD*. New York: Palgrave.

Wright, K.B. 2005. Researching internet-based populations: advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey service. *Journal of computer-mediated communication* (online), 10 (3): 26-30. Available: [http://www.onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1083](http://www.onlinelibrary.wiley.com/journal/10.1111/(ISSN)1083) (Accessed 11 December 2016).

Yilmaz, K. 2013. Comparison of quantitative and qualitative research traditions: epistemological, theoretical and methodological differences. *European journal of education* (online), 48 (2):1-16. Available: <http://www.academia.edu/> (Accessed 12 December 2016).

Young, C. 2008. Incorporating undergraduate advising in teaching information literacy: case study for academic librarians as advisors. *The journal of academic librarianship* (online), 34(2): 139-144. Available: <http://www.sciencedirect.com> (Accessed 12 March 2015).

Zhong, Y. and Alexander, J. 2007. Academic success: how library services make a difference. In. *Sailing into the future: charting our destiny*. Proceedings of the 13th National conference of the American College and Research Libraries (ACRL). Baltimore, Maryland, 29 March-1 April 2007, 141-157.

APPENDIX A

Student survey questionnaire

An assessment of the integration of information literacy education with first year students from the Faculty of Management Sciences at the Durban University of Technology - Durban Campus

Informed Consent Document

Dear Participant,

My name is Kogilambal Naicker, student number, 215066551. I am a subject librarian at the Durban University of Technology Library and a Masters candidate studying at the University of KwaZulu- Natal, Pietermaritzburg Campus. The title of my research is:

An assessment of the integration of information literacy education with first year students from the Faculty of Management Sciences at the Durban University of Technology – Durban Campus. The aim of the study is to assess the integration of information literacy education interventions with first year students from the Faculty of Management Sciences at the Durban University of Technology - Durban Campus. This study would benefit first year students as universities would be made aware that the integration of information literacy education is crucial at universities. The focus will be on those students that have undergone the training from specific departments and your participation in this study will give me the opportunity to share your experiences and observations on the subject matter.

Please note that:

- * The information you provide will be used for scholarly research only.
- * Your participation is entirely voluntary.
- * Your views in this study will be presented anonymously. Neither your name nor identity will be disclosed in any form in the study.
- * The questionnaire will take about 15 -20 minutes.
- * The questionnaire will be held in a password-protected file accessible only to myself and my supervisor. After 5 years, in line with the rules of the University of KwaZulu-Natal, it will be disposed of by shredding and burning.
- *If you agree to participate, please acknowledge the declaration below.

I can be contacted at:

Durban University of Technology, BM Patel Library, ML Sultan Campus.

Email: kogien@dut.ac.za.

Phone number: 031 3735456

Cell: 0836457299

My supervisor is Mr Athol Leach who is located at the School of Social Sciences, Department of Information Studies, University of Kwa-Zulu Natal, Pietermaritzburg Campus, Scottsville, Pietermaritzburg.

Contact details: Leach@ukzn.ac.za

Phone number 033 2605098

The Humanities and Social Sciences Research Ethics Committee contact details are as follows: Ms Phumelele Ximba, University of KwaZulu-Natal, Research Office, Email:

ximbap@ukzn.ac.za, Phone number 031 2603587.

Thank you for your contribution to this research.

DECLARATION

I hereby confirm that I understand the contents of this document and the nature of the research project and I consent to participating. 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.

1. INFORMED CONSENT DECLARATION

If you agree to voluntarily participate in this research study, please provide your consent by selecting the appropriate box below.

- Yes, I confirm that I have read the information and I understand that my participation in this study is voluntary
- No, I do not wish to participate in this study

1. Are you a registered student?

- Yes
- No
- Other (please specify)

2. Please indicate the Faculty in which you are registered?

- Faculty of Management Sciences
- Other (please specify)

3. Please state the programme that you are registered for:

- National Diploma: Management
- National Diploma: Marketing
- National Diploma: Retail Management
- National Diploma: Public Relations

4. Please indicate your race:

- African
- Coloured
- Indian
- White
- Other (please specify)

5. Please indicate your gender:

- Male
- Female

6. What type of area did you attend high school in?

- Urban
- Rural
- Other (please specify)

7. Do you believe that the high school that you attended was:

- Well-resourced
- Under-resourced
- Not sure

8. Please indicate your level of experience with information and communication technologies (ICT), e.g. email, internet and the library computer system, that is Summon and iLink:

- Very experienced
- Experienced
- Little experience
- No experience

9. Which of the following information and communication technologies (ICTs) do you use?

- Email
- Internet
- Facebook
- Twitter
- None of the above
- Other (please specify)

10. Are you comfortable using the library computer system, that is, iLink and Summon?

- Very comfortable
- Comfortable
- Not comfortable
- Not sure

11. Do you have access to the Internet outside campus?

- Yes
- No

12. When you began the Information Literacy course at DUT, did you feel disadvantaged with the technologies being used?

- Yes
- No
- A little

13. Do you think that the digital divide, that is, the lack of access for some people to information and communication technologies (Internet, Facebook and other social networking applications) has an impact on Information Literacy teaching and learning at DUT?

- Yes
- No
- Not sure

14. In what ways has the digital divide (lack of access to ICTs) impacted on the information literacy training that you have received at DUT?

- I have found it difficult to use the keyboard, mouse, and other applications
- It has been easy to follow the information literacy training
- Other (please specify)

15. Do you think that students should have some computer training before attending the Information Literacy classes?

- Yes
- No
- Not sure

16. Do you think that the integration of Information Literacy, that is, by the Subject Librarian making use of your course assignments while teaching, there has been a positive impact on students' learning?

- Yes
- No
- Not sure

If you answered "Yes" please explain.

17. In your view, from attending the Information Literacy classes, if integrated assignments from your coursework were used to teach Information literacy, was this a good idea? That is, did you feel that if assignments were used, the classes were more meaningful?

- Yes
- No
- Not sure

If you answered "Yes" please explain.

18. During the Information Literacy classes, if assignments or projects were used to help you understand what was being taught better, do you think that this has helped a great deal?

- Yes
- No
- Not sure
- If you answered "Yes" please explain how this has helped you?

19. During the Information Literacy classes, did you experience any problems in terms of what was being taught in general?

- Yes
- No
- Not sure

If you answered "Yes" please explain.

20. Do you feel that by attending Information Literacy classes, you are better able to find information for your assignments, that is, did you manage to find books and/or journals for your assignments?

- Yes
- No
- Not sure

21. Do you feel that by attending the integrated Information Literacy classes, you are able to reference your assignments better than previously?

- Yes - can now reference my assignments
- No - I need more help on referencing
- Not sure

Please explain

22. Do you feel that by attending Information Literacy classes, you feel more confident in doing your assignments?

- Yes
- No
- Not sure

23. While attending Information Literacy classes, you had an integrated assignment to submit. This means that the Subject Librarian worked with you with an assignment that was credit bearing, that is, the assignment marks contributed to your course mark. Do you feel that the Information Literacy classes contributed positively towards this assignment mark?

- Yes
- No
- Not sure

24. You were given a test at the end of the Information Literacy classes.

The mark for the test also contributed to the course mark. Do you feel that the test was fair?

- Yes
- No
- Not sure

If you answered "Yes", please explain.

25. From your experience of attending the Information Literacy classes, do you feel that the teaching of Information Literacy could be improved in any way?

- Yes
- No
- Not sure

If you answered "Yes" please explain.

26. While attending the Information Literacy classes, did you experience any problems in terms of resources? For example, did you have any problems with the computers?

- Yes
- No
- Not sure

If you answered "Yes" please explain.

27. While attending the Information Literacy classes, did you experience any problems in terms of the venues?

- Yes
- No
- Not sure

If you answered "Yes" please explain.

28. Do you have any other comments?

Thank you for your time and willingness to participate in this survey.

APPENDIX B

Lecturer survey questionnaire

An assessment of the integration of information literacy education with first year students from the Faculty of Management Sciences at the Durban University of Technology - Durban Campus

1. INFORMED CONSENT DECLARATION

If you agree to voluntarily participate in this research study, please provide your consent by selecting the appropriate box below.

- Yes, I confirm that I have read the information and I understand that my participation in this study is voluntary
- No, I do not wish to participate in this study

2. Are you a full-time or part-time staff member at DUT?

- Full-time
- Part-time
- Other

3. What is your designation?

- Lecturer
- Senior lecturer
- Head of department

4. What is your highest academic qualification? Please select one only.

- National Diploma
- Post Graduate Diploma/Higher Diploma/Advanced Diploma
- BTech

- Bachelors Degree
- Honours
- Masters
- Doctorate/PhD
- Other (Please specify)

5. How many years' experience do you have as a lecturer (including, if applicable, as a Senior lecturer and

Head of department)?

- 0-1
- 2-5
- 6-10
- 11-15
- 16-20
- 21-25
- More than 25 years

6. For how long have you been involved in the integration of Information Literacy with first year students?

- 0-1 year
- 2-5 years
- 6-10 years
- More than 10 years

7. You have been involved, together with the subject librarian, in the integration of Information Literacy into the curriculum of first year students from the Faculty of Management Sciences. Did this liaison work well?

Yes

No

Please explain

8. You used integrated assignments and/or projects that you submitted to the subject librarian. Was this good practice?

Yes

No

Not sure

Please explain

9. Integrated assignments and/or projects were used in the Information Literacy classes. Were the assignments and/or projects set out formally in the programme study/learner guide?

Yes

No

Please explain

10. Did using integrated assignments make a positive contribution to students' performance in terms of the way in which they write assignments?

- Yes
- No
- Not sure

Please explain

11. Do you think that through the Information Literacy interventions with the subject librarian, students were better equipped to find and use relevant information for their assignments?

- Yes
- No
- Not sure

Please explain

12. Do you think that by students attending the Information Literacy classes, they were able to reference their assignments correctly?

- Yes
- No
- Not sure

Please explain

13. From your experience, what has been the impact in terms of students' academic performance of the integration of the Information Literacy classes with first year students in your department?

- Positive
- Negative
- Not sure

Please explain

14. The objective of the Information Literacy training is to ensure that students are able to recognise the need for information, locate and retrieve information, evaluate information and use information responsibly. Do you believe, from your experience of being involved in the Information Literacy training that this objective is being met?

- Yes
- No
- Not sure

Please explain

15. Do you believe that the digital divide, that is, amongst other things, the lack of access for some people to ICTs and the lack of skills to use the ICTs plays a part in the teaching and learning of information literacy?

- Yes
- No
- Not sure

Please explain

16. I want to ask you about challenges (problems) that you may have experienced with integrating Information Literacy into the curriculum. Did you experience challenges with student attendance?

- Yes
- No

If you answered "Yes" please explain.

17. Did you experience challenges with venues?

- Yes
- No

If you answered "Yes" please explain.

18. Did you experience challenges with students being under-prepared in terms of having the necessary computer skills and/or access to computers?

- Yes
- No

If you answered "Yes" please explain.

19. If there were any other challenges that you experienced with integrating Information Literacy into the curriculum, please list them below:

20. In your view, what can be done to improve the teaching of Information Literacy?

21. Are there any other comments that you would like to make with regard to the integration of Information Literacy into the curriculum?

Thank you for your time and willingness to participate in this survey.

APPENDIX C

Subject librarian survey questionnaire

An assessment of the integration of information literacy education with first year students from the Faculty of Management Sciences at the Durban University of Technology - Durban Campus

1. INFORMED CONSENT DECLARATION

If you agree to voluntarily participate in this research study, please provide your consent by selecting the appropriate box below.

- Yes, I confirm that I have read the information and I understand that my participation in this study is voluntary
- No, I do not wish to participate in this study

2. Are you a full-time or part-time staff member at the Durban University of Technology (DUT)?

- Full-time
- Part-time
- Other (please specify)

3. What is your designation?

- Subject Librarian
- Post-graduate librarian
- Cataloguing librarian

4. What is your highest qualification? Please select one only.

- National Diploma
- Post-Graduate Diploma/Higher Diploma/Advanced University Diploma
- BTech
- Bachelors Degree
- Honours
- Masters
- Doctorate/PhD

5. How many years' experience do you have in the position that you are in?

- 0-1
- 2-5
- 6-10
- 11-15
- 16-20
- 21-25
- More than 25 years

6. For how many years have you been in the teaching/training of Information Literacy to first year students?

- 0-1 year
- 2-5 years
- 6-10 years
- More than 10 years

7. You were involved in the integration of Information Literacy into the curriculum with first year students. That is you made use of an integrated assignment from the coursework to teach Information Literacy. Do you believe that this worked well in terms of students' understanding their assignment better?

- Yes
- No
- Not sure

8. From your experience, what has been the impact of Information Literacy integration on students?

- Positive
- Negative
- Not sure

Please explain

9. I want to ask you about challenges (problems) that you may have experienced with integration information literacy into the curriculum. Did you experience challenges with student attendance?

- Yes
- No

If you answered "yes" please explain.

10. Did you experience challenges with venues?

- Yes
- No

If you answered "Yes" please explain.

11. Did you experience challenged with students being under-prepared in terms of having the necessary computer skills and/or access to computers?

- Yes
- No

If you answered "Yes" please explain.

12. If there were any other challenges that you experienced with integrating Information Literacy into the curriculum, please list them below:

13. Has there been enough support from the academic departments which were part of the programme in integration Information Literacy into the curriculum?

- Yes
- No
- Not sure

Please explain

14. Do you believe that the digital divide, that is, amongst other things, the lack of access for some people to ICTs and the lack of skills to use the ICTs play a part in the teaching and learning of information literacy?

- Yes
- No
- Not sure

Please explain

15. Do you believe that all first year students should have some sort of computer training before attending Information Literacy classes?

- Yes
- No
- Not sure

Please explain

16. The objectives of Information Literacy training is to ensure that students are able to recognise the need for information, locate and retrieve information, evaluate information and use information responsibly. Do you believe, from your experience of being involved in the Information Literacy training that this objective is being met?

- Yes
- No
- Not sure

Please explain

17. What can be done to improve the teaching of Information Literacy?

18. Are there any other comments that you would like to make with regard to the integration of Information Literacy into the curriculum?

Thank you for your time and willingness to participate in this survey.

APPENDIX D

Students focus group interview

An assessment of the integration of information literacy education with first year students from the Faculty of Management Sciences at the Durban University of Technology - Durban Campus

Greetings and introductions. Can each of you tell the group your name and the course that you are registered for?

1. As per your study guide and your timetable, it is a requirement for all students to attend the information literacy classes. Did you attend all classes?
2. If you did not attend all classes, why not?
3. Do you know if all of your colleagues attended the classes? If not why do you think they did not attend?
4. If you attended all or some of the classes, how did the classes help you?
5. Would you have been able to find information for your assignments and projects without the help of the classes?
6. Do you believe that the digital divide, that is, amongst other things, the lack of access for some people to ICTs and the lack of skills to use the ICTs plays a part in the teaching and learning of information literacy? Has this had an impact on information literacy (IL) training at the tertiary level? Please elaborate in terms of your experience with the digital divide in the classroom.

Prompt: In what ways do the digital divide impact on IL training?

7. Do you believe that the South African school education system has created a digital divide that impacts on students' performance at tertiary level? Please explain.
8. In your view, do you believe that you benefited from the information literacy classes?

Prompt: in what ways did you benefit?

9. Did you experience any problems with the way in which the information classes were administered?

Prompt: What were the problems?

10. Are there recommendations that you would like to make to improve the information literacy classes?
11. Are there any other comments that you would like to make with regard to the issues raised in the discussion?

Thank you for your time and effort in contributing to this study.