Information literacy of incoming undergraduate Arts students at the University of the Western Cape : assessment of competencies and proficiencies

Lizette King

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Supervisor : Prof. G.H. Fredericks

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DECLARATION

"I declare that the thesis **Information literacy of incoming undergraduate Arts students at the University of the Western Cape: assessment of competencies and proficiencies** is my own work, that it has not been submitted before for any other degree or assessment in any other university and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references."

Signature ……..

Date ……

DEDICATION

I would like to dedicate this thesis to my late father Alec van der Vyver who encouraged me from an early age to obtain the best education possible.

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ABSTRACT

The majority of incoming undergraduate Arts students at the University of the Western Cape (UWC) come from South African historically disadvantaged black schools. Because of enormous varying secondary school experiences and competencies as well as a lack of exposure to school and public libraries students are deprived of the basic information skills. Without these crucial skills students will find it difficult to cope successfully with their academic courses and measure up to the demands of employers. The information environment is too complex and changing too rapidly to expect students to acquire information literacy without an instructional program.

The study aimed to answer the following research questions:

- What are incoming Arts students' previous experiences with libraries and information technology?
- What are incoming undergraduate Arts students information skills, competencies and proficiency?
- Is the Library Science 121 (Arts Information Literacy) course sufficient for teaching information literacy and to address deficiencies?

A pen and paper questionnaire based on the Information Literacy Standard by the American Library Association to assess the information literacy level of incoming Arts students was designed by the Department of Library and Information Science, the University Library and the Digital Academic Learning Division. This was utilized to assess the exposure to information literacy training at school level, computer and public library skills as well as their level of information literacy of incoming undergraduate Arts students. As a post-test, the questionnaire was completed by students after completing the information literacy course, Library Science 121. To determine the impact of formal training compared

to initiatives within disciplines, the results of the post- and control tests were compared. Data was gathered over a period of three years.
Of the 483 incoming Arts students 22.2% owned their own computers. Of the rest 39.5% had other means to get assess to computers. In total 16.5% of students used the World Wide Web to find information. Only 23.2% attended secondary schools with school libraries and 10.4% of these students received information literacy education. Of all the students, 20.7% were members of a public library of which 41.0% visited the library every few months mainly for photocopying.

Of the thirty three questions asked to test information literacy, in only 7 the percentage of students in the pre- and control groups who have chosen the correct answer was higher than the incorrect options – indicating an unacceptable low level of information literacy. Students performed significantly better in the post-test. It is an indication that formal information literacy education is essential for incoming Arts students at the UWC.

Results were used to identity deficiencies in information literacy levels, to produce benchmarks for assessing information literacy at the university and to produce a theoretical framework for structured cumulative information literacy initiatives within new envisaged foundation programs. Curricular changes to keep pace with current trends and needs were made.

Data gathered will be used to communicate to the Arts Faculty the need for formal information literacy training for all incoming Arts students at the UWC and to incorporate information literacy in student learning outcomes as well as in the assessment policy.

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LIST OF ACRONYMS

ACRL	Association of College and Research Libraries
ALA	American Library Association
IFLA	International Federation of Library Associations and Institutions
ISST	Information Seeking Skills Test
LIASA	Library and Information Association of South Africa
SAILIS	Standardized assessment of Information Literacy
SCONUL	Society of College, National and University Libraries
UWC	University of the Western Cape
WWW	World Wide Web

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1. INTRODUCTION

1.1 Rationale of the study

Most incoming undergraduate students do not possess adequate information skills to complete some of the required course work tertiary education requires. Due to the legacy of inadequate schooling, lack of exposure to school and public libraries and limited access to resources the majority of students entering the University of the Western Cape (UWC) are deprived of even the basic library and information skills expected from them.

The introduction to the university library in the orientation week is not sufficient to give them confidence to use the university library or to approach librarians for assistance. The culture of course readers with notes and copied parts of textbooks and journal articles creates the impression that studying the readers and using only the prescribed material in the short loan division of the library, is enough to graduate.

Being an information literate individual is of importance in today's information society. Students must be able to deal with information overload, information anxiety and constant changes in format and retrieval techniques. Library orientation programs and the teaching of information retrieval skills to these students are not good enough. More focus on critical thinking, data-driven decision making and analytical problem solving is required. Emphasis should be placed on developing students' critical thinking skills because it is not only the process of finding information that is important, but what they intend doing with it.

Both secondary and tertiary education systems have recognized the validity of the construct of information literacy. An information literate person will not only be someone who has the ability to find, access and evaluate information for a specific need, but will use cognitive skills of analyzing, assessing, synthesizing, organizing and using the information.

The so-called “higher order” of information skills includes critical thinking and problem-solving cognitive processes. These are the skills that all students should acquire during their undergraduate studies in order to function effectively in the work place and in the information society.

The need for individuals to be information literate is, according to Bundy (1999: 235), accentuated by the fact that the growth of knowledge is of such a nature that universities’ curriculum and course content will always be behind. Information literate people are ultimately those who have learned how to learn because they can always find the information they need for any task or decision at hand instead of trying to remember content learned long ago (Breivik-Senn & Senn, 1998: 24).

Information literacy has become one of the most important skills in the information society and governments have a specific responsibility towards citizens to prepare them for the challenges posed by the era we live in and should ensure that all learners leave school as information literates (Boekhorst, 2004: 63).

Although information literacy has been researched and practiced in many countries, especially Australia and the United States of America, information literacy research is according to Bruce (2000b: 91) still in its infancy. Research on especially how to benchmark information literacy, how to measure effectiveness of information literacy programs and how information literacy is manifested in workplace settings is needed (American Library Association. Association of College and Research Libraries, 2005b). In South Africa only a few studies were done during the 1990’s ranging from primary school to higher education level (De Jager & Nassimbeni, 2002: 167).

According to Zinn (2000: 42) absent from worldwide studies on information literacy is the explicit address of English language learners and the acquisition of information literacy skills. In South Africa with its multilingual society, it is an immediate and pertinent problem.

Information literacy is a crucial skill in tertiary education. At the UWC it has not reached that stage yet. In order to implement a campus wide information literacy initiative it is essential that:

- the baseline skills of incoming students are determined,
- an information literacy test that will exempt students who acquired
- the required competencies during their schooling should be implemented,
- clear understanding of the concept information literacy by all role players should be reached,
- a framework for teaching information skills with good teaching practices as well as a framework for assessing it, must be set.

A generally accepted assessment instrument for testing general information competence of incoming students at UWC is needed. This will identify gaps in competence that can be rectified and will allow librarians and academics to work from there with the assumption that students have uniform basic information literacy levels.

1.2 Hypothesis

Many incoming Arts students at UWC are, because of enormous varying secondary school experiences and competencies, without even the lower order information skills. Students without these crucial skills will find it difficult to cope successfully with their academic courses or eventually measure up to the demands of employers. The information environment is too complex and changing too rapidly to expect students to acquire information literacy without a planned, cumulative instructional program.

If the information literacy of undergraduate Arts students at the UWC is assessed, academics in collaboration with university librarians can develop structured cumulative information literacy initiatives to ensure that students graduate with the required information skills and proficiencies.

This study aims to give answers for the following research questions:

- What are incoming Arts students' previous experiences with libraries and information technology?
- What are the baseline information skills, competencies and proficiencies of incoming Arts students at UWC?
- Should the existing Library Science 121 (Arts information literacy) course be adapted to ensure sufficient teaching of information literacy?
- Is a generic faculty wide information literacy course needed to ensure that all Arts students acquire an acceptable level of information literacy or is the Library Science 121 course plus the library's information initiatives sufficient enough?
- Does information literacy impact on academic success of Arts students at UWC?

1.3 Aims and objectives of the study

Although standards for information literacy have been developed, little is known about the extent to which South African undergraduates meet these sets of standards. Given the school situation in South Africa and the fact that research has shown that students think they know more about accessing information and conducting library research than they are able to demonstrate when put to the test (Maughan, 2001: 71), it was decided to establish a platform from where to work. According to Maughan (2001: 74) measuring information competencies will establish a baseline of student skills, supply guidelines for adapting current information literacy courses where necessary, assess the effectiveness of the library orientation programs, determine the impact of library orientation and information literacy programs on academic success and generate data to communicate to faculty.

The objectives of this study intend to serve the following purposes:

- To assess the information literacy level of Arts students entering UWC to establish a baseline of information competence skills
- To investigate whether existing information literacy initiatives within the Arts faculty teach information literacy sufficiently
- To investigate the impact of the Library Science 121 course
- To gather reliable data as support for an information literacy course for all UWC Arts students

1.4 Research methodology

1.4.1 Research procedure

A questionnaire to assess the information literacy level of incoming Arts students was designed. The first part of the questionnaire assessed their exposure to school libraries and information literacy training at school level, computer literacy and public library skills. The second part assessed the baseline information literacy competence and will also serve as a pre test for students who were enrolled for the Library Science 121 (Arts information literacy) course. The same questionnaire was completed by students after completing the Library Science 121 course and was used as a post test.

Data gathered were used to construct a profile of an Arts student entering the UWC as well as to construct baseline information literacy skills of incoming students. By comparing the pre and post test the impact of the course as well as the foreseeable improvement in information literacy at the end of the first year of study was determined. Results were also used to identify gaps in the information skills of students and how the Library Science 121 course should adapt to address these deficiencies.

The same questionnaire was completed by a group of Arts students not registered for the Library Science 121 course to serve as the control group. By comparing the information literacy levels of this control group with Arts students who underwent the information literacy training, the

impact of formal training compared to initiatives within disciplines was determined.

Data was gathered over a period of three years, from 2003 till 2005.

To determine if the Information literacy course impacted on academic performance the academic status of students willing to partake in the study for the subsequent years were compared. Comparing the sets of data indicated whether students who had formal information literacy teaching have reached higher levels of information literacy with resulting higher academic performance or whether students were able to pick up the needed skills in an informal way.

The fact that the majority of incoming students were not computer literate, was a factor that played a role in the decision to use a paper and pen questionnaire. Thirty minutes of lecture time was used each time to allow both the students in the Library Science 121 course and in the control groups to complete the questionnaire. This resulted in a 100% return of questionnaires distributed. Absenteeism resulted in the fact that not the same students completed both the pre- and the post-tests.

1.4.2 Delimitation of the study

This study assessed the information literacy of only the Arts undergraduate students from the year 2003 till 2005 at the UWC. The pre- and post-questionnaires were completed by first year Arts students enrolled for the Library Science 121 course at the UWC.

1.4.3 Ethical statement

There are ethical implications with any research conducted with human participants, but as far as possible the researcher guaranteed that no person's rights were violated in any manner. Data collection was based on the principle of informed consent.

1.5 Description of concepts

1.5.1 Information literacy

The general definition for information literacy is the ability to effectively access and evaluate information for a given need. Internationally the most frequently used definition is that of the American Library Association (ALA) (1989:1) namely that an information literate person must be able to recognize when information is needed and have the ability to locate from a variety of resources (both printed and electronic) and use effectively the retrieved information to solve a particular problem or to make a decision. It is the ability to access, evaluate and use information from multiple formats.

The electronic world and the World Wide Web (WWW), screens and images are replacing more and more alphabetical text and print discourse. Visual literacy or the ability to analysis the contents and meaning of images and to understand the relationship between words and images are becoming important (Harris, 2006: 213).

1.5.2 Academic literacy

In general academic literacy can be defined as academic reading, writing and critical thinking. In a broader sense academic literacy is the skill to read and comprehend various discipline-based materials, to deal with difficult vocabulary, to understand text cues, to develop research skills and to present viewpoints (Amos, 1999: 178 and Pearce & Amos, 2000: 58).

Leibowitz (1995: 34 – 35) adds to these definitions and indicated that an academic literate will be an individual with the confidence to critique and argue as well as have the ability to manipulate the conventions of academic writing and language. It is somebody who has in other words earned authority as a writer demonstrating knowledge of course contents and fluency in using mostly English.

According to Burton and Chadwick (2000: 309) and Weideman (2003: 64) an academic literacy course should focus not on language, but on the

academic process; enhance academic experiences and elicit information-seeking, information-processing and information producing performance. Key elements are the ability to locate, select, evaluate, synthesize and cite sources in their own writing.

It can be deduced that information literacy is a broader concept than academic literacy but that there are some overlapping areas between the two concepts.

1.5.3 Computer literacy

Computer literacy can be defined as the understanding of what computer hardware and software can do. It is the competence to use computers to complete a task. Although computer literacy plays an important role in the accessing of information, information literacy goes beyond computer literacy. A computer literate person is not automatically an information literate individual, because the latter requires cognitive skills and problem-solving processes (Behrens, 1990: 355; Horton, 1983: 16; Johnson & Eisenberg, 1996: 13 and Rockman, 2004a: 7).

1.5.4 Information technology literacy

According to Bruce (1997: 21) information technology is the technology or tool used for information production, management, storage, assessment and dissemination of information. Information technology literacy is the ability to know what resources are available, what information is within these sources and how to use technology to access and communicate information (Sayed & De Jager, 1997: 6). Rockman (2005: 141) and Rockman & Smith (2005: 587) defined information technology literacy as the ability to use digital technologies communication tools and or networks to solve information problems in order to function in the information society.

Information literacy is a broader concept because information technology supports information literacy (Bundy, 2003: on-line; DeMars, Cameron & Erwin, 2003: 253 and Everhart & Valenza, 2004: 50). An information

literate person will be able to employ information technology to access, retrieve, store, manage and communicate information.

1.5.5 Information fluency

According to Sharkey (2006: 71) information fluency is the integration of information literacy, critical thinking and the ability to use technology to find information. Rader (2004: 75) defined it as the ability to navigate information structures and to evaluate information retrieved through these structures. Harris and Millet (2006: 520 - 521) came to the conclusion that information fluency is the fusion of literacies and that it is the optimal outcome when critical thinking skills are combined with information, computer and information communication technology literacy.

1.5.6 Library literacy

According to Behrens (1993: 124) library literacy is the ability to use the resources, services and facilities of a library independently and effectively. A library literate person will be able to locate and retrieve information within the library using retrieval tools such as catalogues and indexes. A wide range of terms like library education, library instruction, library orientation, book education and bibliographic instruction are used to describe the teaching of library literacy.

Although library skills play an important role in providing a framework within which information literacy skills are attained, information literacy involves the retrieval and location of information beyond an individual library. It also involves the cognitive process of not only the lower order skills of retrieving and locating of information, but also the evaluation and use thereof (Behrens, 1990: 355).

1.6 Outline of thesis

Chapter one discusses the background to the study. Chapters two, three, four, five and six review the literature covering aspects of information literacy, information literacy training in higher education, with specific reference to the University of the Western Cape as well as the assessment of information literacy. Chapter seven supplies a profile of an incoming student at tertiary institutions, again with specific reference to UWC students. Chapter eight presents details of the research design and methodology as well as the capturing and analysis of data. Findings are discussed in chapter nine, ten and eleven and the study ends with chapter twelve supplying a summary of the findings of the study and recommendations.

2. INFORMATION LITERACY

2.1 Introduction

The origins of information literacy can, according to Rockman (2004a: 4), be traced back to the nineteenth century. Before the 1970s the terms library user instruction, book education and library skills were used to describe education programs offered to students and library users. Because of rapid technological developments and the proliferation of networks, library centred skills became inefficient in the information age.

2.2 Historical overview

Paul Zurkowski first used the term “information skills” in 1974 to refer to a person who is able to solve information problems by using relevant information sources and applying relevant technology. Since the 1980s the term information literacy started to appear in the literature to refer broadly to the ability to locate, evaluate and manage information (Behrens, 1994: 310; Boekhorst, 2004: 64; Maughan, 2001: 71 and Webber & Johnston, 2000: 383).

A steady rise of interest in information literacy resulted in the publication of more than 5 000 articles on the subject by the year 2002, of which over 300 were published in 2002 alone (Rader, 2002: 242).

The term information literacy is a multifaceted concept and numerous definitions for information literacy and ambiguity were found in the literature. The term information literacy can be seen as referring to the use of information technology, or a combination of information and technology skills, or acquiring mental models of information systems. The concept creating knowledge or knowing of existing information or knowing where to obtain knowledge were used interchangeably with terms like computer literacy, bibliographic instruction, library literacy, academic literacy and information technology skills (Andretta, 2005: 12). As a result

the meaning of the phrase to especially non-librarians was unclear (Snavely & Cooper, 1997: 10).

Lack of clarification prompted the American Library Association Presidential Committee on Information Literacy to investigate the issue and in 1989 formulated the most appropriate and frequently used definition, namely to be information literate a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information (American Library Association, 1989: 1). It implies that an information literate person will have the competencies to find information manually, to use information technology to retrieve and disseminate information and to use information independently.

In 1990 the American Patricia Senn Breivik founded the National Forum on Information Literacy with the aim of raising awareness of and sharing new developments in information literacy among educational, governmental, technological, and business organizations (Gibson, 2004: 16 and Rockman, 2004a : 5).

According to Behrens (1994: 313) by the beginning of the 1990s many user education programs were replaced by initiatives aiming to achieve information literacy, but uncertainty and antagonism towards it still prevailed.

To address the problem various library associations started to identify skills that people must master before they will be able to perform all the functions necessary to become information literate. A set of information literacy competency standards for the United States of America was published by a division of the American Library Association (ALA), the Association of College and Research Libraries (American Library Association. Association of College and Research Libraries, 2000).

In 1999 the Society of College, National and University Libraries (SCOCUL) published a model for information literacy for the United Kingdom (Society of College, National and University Libraries, 1999: on-line). In 2001 the Council of Australian University Librarians (Council of Australian University Librarians, 2001) published a document containing what Australian librarians regarded as information literacy standards. After collaborative work between Australia and New Zealand a second edition of information literacy standards was published by the Australian and New Zealand Institute for Information Literacy in 2004 (Australian and New Zealand Institute for Information Literacy, 2004). In the year 2000 the International Federation of Library Associations and Institutions (IFLA) published guidelines for professional library and information educational programs (IFLA, 2000: on-line). These publications formed the basis for frameworks and models for information literacy internationally.

Andretta (2005: 41 – 54) compared the three prominent models and summarized them as follows:

Table 1 : Summary of the three main information literacy models

ALA IL standards		**ANZIIL IL standards**		**SCONUL information skills**	
An information literate person is able to:					
1	Determine the extent of information needed	1	Recognise a need for information and to determine the extent of information needed	1	Recognize a need for information
2	Access the required information effectively and efficiently	2	Find information effectively and efficiently	2	Distinguish ways in which the information gap may be addressed
3	Evaluate information and its sources critically and incorporate selected information into his/her knowledge	3	Critically evaluate information and the information-seeking process	3	Construct strategies for locating information

	base and value system				
4	Use information effectively to accomplish a specific purpose	4	Manage information collected or generated	4	Locate and access information
5	Understand many of the economic, legal and social issues surrounding the use of information, and access and use information ethically and legally	5	Apply prior and new information to construct new concepts or create new understandings	5	Compare and evaluate information obtained from different sources
6	-	6	Use information with understanding and acknowledge cultural, ethical, economic, legal and social issues surrounding the use of information	6	Organize, apply and communicate information to others in ways appropriate to the situation
7	-	7	-	7	Synthesise and build upon existing information, contribution to the creation of new knowledge

2.3 Information literacy defined

Various definitions for information literacy are found in the literature. Snavely and Cooper (1997: 9 -13) and Behrens (1992: 83 – 85) discuss for example the issues surrounding the term. For the purpose of this study information literacy will be regarded as the ability to recognize when information is needed and to locate, evaluate and use effectively the information needed to solve a problem, make a decision or to complete a task. It is the ability to use traditional and modern information technology to retrieve, manage and communicate information in an ever widening array of information resources.

Because of the dynamic nature of information literacy, the concept has been subjected to ongoing research. Johnson and Jent (2004: 413 – 442; 2005, 487 – 530 and 2007: 137 – 186) give an overview of the latest trends in library instruction and information literacy. According to the Association of College and Research Libraries (American Library Association, 2000: 1) and Fourie and Van Niekerk (1999: 338 - 339) the information literate person is able to:

- determine the extent of information needed,
- recognize that accurate and complete information is the basis for intelligent decision making,
- access the needed information effective and efficiently,
- develop successful search strategies,
- evaluate information and its sources critically,
- incorporate selected information into his or her knowledge base,
- use information effectively to accomplish a specific purpose,
- apply information in critical thinking,
- understand the economic, ethical, legal and social issues surrounding the use of information

2.4 Information literacy process

Information literacy is not a static concept. It refers to a dynamic process of recognizing information needs, the retrieving, evaluation, use and dissemination of information to acquire, extend or create new knowledge as well as to make decisions for self-actualisation and development (Boekhorst, 2004: 64 and Sayed, 1998: 14). Information literacy is not a single act of collecting facts, but the product of a process of information education (Marais, 1994: 15).

The Department of Library and Information Science at the UWC used work done by Behrens, Olën and Machet (1999: 48 – 111), Eisenberg and Berkowitz (1995: 22 - 26), Kuhlthau (1994: 28) and Kuhlthau (2004) to develop an active learning information literacy spiral emphasising cognitive thinking skills :

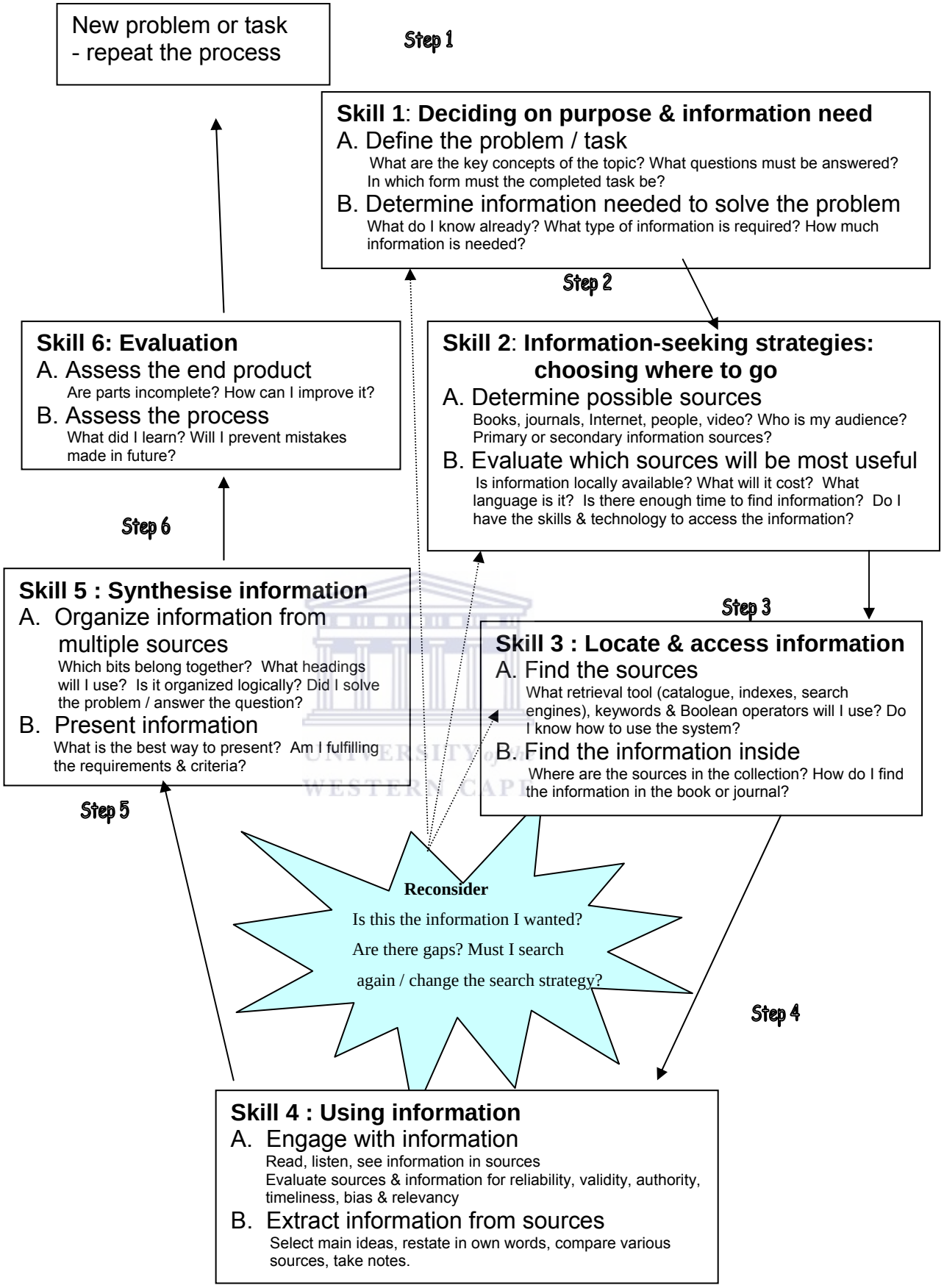


Figure 1 : Active learning spiral for information literacy

2.5 Information literacy skills

Information literacy skills were summarized by Barry (1997: 225); DeMars, Cameron and Erwin (2003: 254-255) and Eisenberg and Berkowitz (1995: 24) into the following sequential stages:

- Define, formulate and analyse the task or problem
- Describe services typically available in libraries
- Choose appropriate reference sources for a particular information need
- Employ an efficient search strategy for a research paper or speech
- Search library catalogues, research data bases and the Internet effectively
- Locate, access and extract relevant information in sources
- Evaluate sources in terms of accuracy, authority, bias and relevance
- Record and store collected information
- Organize and synthesis information in the required format from multiple sources
- Apply information ethics by citing sources appropriately and observing copyright
- Evaluate how well the task was completed or the problem solved

The attributes of information literacy belongs in three groups, the first being information skills, that is, to employ traditional and modern information technology to retrieve, manage and present information in an ever widening array of information sources. The second being the cognitive skills of analysing, problem solving, critically thinking, critically evaluating, synthesising, organizing and communicating information. The third is embanked in values and beliefs resulting in using information wisely and ethically as well as with social responsibility and community participation (Andretta, 2005: 44, Hernon & Dugan, 2002: 103 and Scott et al., 2000: 85).

According to Bellardo (1985: 237) information literacy, especially on-line searching is not a single activity, but a large number of complex tasks including query analysis, strategy formulation, creative problem-solving and vocabulary manipulation. Jakobovits and Nahl-Jakobovits (1990: 448) argue that information searching competence involves the three traditional domains of human affairs: the affective for feelings and attitudes, the cognitive for knowledge and reasoning and the sensori-motor for perception and action. To master these skills students must not only be taught how to formulate a search strategy, but must be made aware of the affective involved. They must also get the opportunity to practice to enhance their skills. When students master the skill of how to find and use information effectively, their research assignments will improve, they will perform self-directed searches, personal control will be accomplished, they will compete successfully in the job market and will improve their performance in general (Gross, 2005: 159).

Andretta (2005: 46) identifies higher- and lower-order thinking associated with information literacy. Lower-order thinking involves activities such as the identification of keywords, synonyms and related terms when a search strategy is formulated. Higher-order thinking at the other end of the scale involves abstraction to develop a new hypothesis.

Information literacy skills are generic in the sense that they are general skills common to all learning areas. Research proved however that these skills are most effectively taught when they are incorporated into a specific discipline. Various successful integration of information literacy teaching into course curriculum has been reported (Rockman, 2004a: 16). Grafstein (2002: 200 - 201) listed the following generic information skills:

- Searching / information retrieval skills
    - formulate need, choose keywords, use controlled vocabularies, formulate search strategy and locate information

- Critical thinking / source evaluation skills
    - evaluate all sources for appropriateness regarding timeliness, authority, bias, verifiability and logical consistency

Discipline-specific skills are according to Grafstein (2002: 201) skills that are embedded within the research paradigms and procedures of their disciplines. Students need specialized knowledge of a discipline to:

- Evaluate the content of arguments
- Assess the validity of evidence
- Propose original solutions

Information literacy skills relates to other literacies. It is presumed that an information literate person will be literate, visual literate, library literate, information communication technology literate, computer literate, media literate, network literate as well as numeracy literate (Makhubela & Koen, 1995: 14; McClure, 1994: 118 and Sayed & De Jager, 1997: 6 -7).

The mastering of information retrieval skills alone are in today's information society not good enough. By combining the use of technology with the development of critical thinking skills, students will be better prepared for the complexities of the information world. Critical thinking, data-driven decision making and analytical problem solving (Rockman, 2004b: 238) are required.

2.5.1 Critical thinking skills

Elmborg (2006: 192) as well as Jacobson and Mark (2000: 256) indicated that many students arriving at tertiary institutions will be able to find prodigious quantities of information with relative ease, but that most of them lack the critical-thinking skills and database-searching proficiencies needed for academically outstanding information searches. This critical consciousness must be developed and intellectual growth must be coached.

According to Beyer (1985: 276) critical thinking is the process of determining the authenticity, accuracy and worth of information or knowledge claims. Marais (1994: 16) elaborated on that by stating that the skill of critical thinking will be useful to distinguish between veritable facts and value claims, determining the reliability of sources, determining the factual accuracy of a statement, distinguish relevant from irrelevant information, detecting bias, identifying understated assumptions and determining the strength and logic of an argument.

Hinchliffe (2001: 95), King and Minnic (2001: 177), Nahl-Jakobovits and Jakobivits (1993: 76) as well as Sayed and De Jager (1997: 6) concluded that an essential part of a successful information literacy program is the generation of critical skills. The individual must be able to critically reflect (understand, question, sort, discriminate, select and analyze) on information retrieved from various sources to use these pieces of information to generate new ideas or knowledge. The information literacy process demands critical thinking, reflection, creativity, self-discovery and self-reliance.

According to Crane and Markowitz (1994: 44 – 50) Bloom's taxonomy of higher order thinking skills can be used to teach critical thinking as part of the information literacy process when learners plan their search strategy (identify key words and find synonyms and related terms), decide which database to search, which retrieval tool to use and to analyse and evaluate their search decisions.

Research done by Tsui (2001: 20-21) confirms that the information literacy process will enhance critical thinking and that students must be actively engaged in the teaching/learning process. Once students are not passive receivers of knowledge, they will become independent and thus critical thinkers.

Because the information literate individual is experienced in critical thinking skills, he or she is according to Thompson and Henley (2000: 20 – 22) empowered to:

- absorb new information,
- solve problems and implements a plan of action,
- adapt to new situations
- make decisions by finding alternatives, evaluate them and choose the best given of all the information,
- see things in their minds eye because they are able to organize and process information from things like symbols, pictures and graphs
- think creatively because they can generate new ideas,
- reason by discovering rules and underlying principles

2.5.2 Information literacy in the workplace

The Year of the Reader in 1990 emphasised illiteracy and ways to increase the number of literate South Africans. One of the main reasons thereof was the presumption that in order to be economically active in the information society, the workforce needs to be able to read and write. Behrens (1990: 353), Breivik-Senn and Senn (1998: 129) and Machet (2005: 180) however stated that literacy alone will not equip individuals to cope efficiently with the economic, political, social and cultural dimension of urban living. A broad range of information skills and ultimate information literacy is required to enable employees to sift through the mass of information available, to extract the essentials and to produce evidence to support well-informed proposals.

According to Bruce (1999: 33) employers and managers concentrated initially on computer and information technology skills, but as technology became more seamless and user-friendly, emphasis shifted to how employees are interacting with and using information. Bruce (1999: 46) and Smalley (2001: 690) indicated that requirement of employees can be linked to the seven faces of information literacy. These requirements are:

- critical thinking,
- awareness of personal and professional ethics,
- evaluation of information,
- conceptualising of information needs,
- organization and management of information,
- interaction with information professionals,
- good learners
- the effective use of information in problem-solving, decision-making and research

Asselin (2004: 65) and Oman (2001: 32) concluded by indicating that workers must compete in the new global economy and must therefore develop workforce skills: to manage (locate and gather) and organize information using appropriate technology and information systems. If those skills are lacking, workers will experience information overload and fatigue and will not be able to manage knowledge.

2.5.3 Lifelong learning

Resource-based learning is a learning mode where an individual learns from his or her own interaction with a range of learning resources. It is therefore not dependant on a teacher as class expository (Breivik-Senn & Senn, 1998: 22). Because information literacy is a process of creating new knowledge by knowing of existing information and knowing where to obtain knowledge, it equips students to be independent and continuous learners (Byerly, Downey & Ramin, 2006: 596 and King & Minnic, 2001: 177). Individuals, who can access, evaluate and effectively use information to address the needs or questions experienced in their working, civic and personal lives are independent lifelong learners who can learn outside of formal learning situations (Brendle-Moczuk, 2006: 498 and Jacobson & Mark, 2000: 257).

Eisenberg and Berkowitz (1995: 22 - 26) developed the Big 6 information literacy model to demonstrate the relationship between homework at school level and the information problem-solving process. Learners must

fully understand what is being asked (task definition), scan and extract the relevant data (information use), organize and write an answer in the required format (synthesis) and assess how well the homework was done (evaluation). This set of skills can be transferred to all subject areas at school as well as personal and work applications.

According to Abilock (2004: 9–10) information literacy is a transformational process in which the learner needs to find, understand, evaluate and use information in various forms to create for personal, social or global purposes. If students are taught not only the information skill, but also to transfer that skill, it will become a lifetime habit of mind.

2.6 Conclusion

Both secondary and tertiary education systems internationally have recognized the validity of the construct of information literacy. An information literate person will not only be someone who has the ability to effectively access and evaluate information for a specific need, but will use cognitive skills of analyzing, assessing, evaluating, interpreting, synthesizing, organizing and using the information.

The so-called “higher order” of information skills includes critical thinking and problem-solving cognitive processes. These are all skills required in order to function effectively in the work place and the information society.

Information literate people are ultimately those who have learned how to learn because they can always find the information they need for any task or decision at hand instead of trying to remember content learned long ago. The fact that they can transfer information literacy skills, information literates are lifelong learners.

Not only literacy but information literacy with the need for information, access to information and the ability to handle information effectively as pre requisites are essential for individuals to experience quality of life.

3. INFORMATION LITERACY IN HIGHER EDUCATION

3.1 Introduction

Developing information literate and lifelong learners is central to the mission of higher education institutions (American Library Association. Association of College and Research Libraries, 2000: 16). Students should be assisted to acquire intellectual abilities of reasoning and critical thinking and to construct a framework for learning how to learn. It will provide the foundation of continued growth throughout their careers, for informed citizens and community members.

According to the Association of College and Research Libraries (American Library Association. Association of College and Research Libraries, 2000: 16) information literacy is a key component of lifelong learning and because information literacy augments students' competency with evaluating, managing and using information, it is considered as a key learning outcome.

Baker (2002: 3), Gratch-Lindauer (2002: 14), Owusu-Ansah (2003: 219) as well as Ratteray (2002: 368) are of the opinion that information literacy is so important that accrediting agencies demand information literate students into their standards and expectations.

Various studies like Bruce & Candy (1995: 245), Clay, Harlan & Swanson (2001: 157), Owusu-Ansah (2004: 15) and Rockman (2004b: 237) indicated that university communities should develop a campus wide culture which embraces the value of information literacy. Information literacy should be integrated into the core higher education curriculum as a university-wide responsibility (Rockman, 2004b: 247). According to Sun (2002: 211) information literacy is one of the four essential abilities, along with reading, writing and mathematics that students in higher education should acquire.

Information literacy in higher education is not controversial – everybody agrees that it is important. Because of the uncertainty about what it entails, who is responsible for teaching it and uncertainty about the curriculum, outcomes and assessment, information literacy is irrespective of the fact that it is regarded as one of the most important aspects, one of the least discussed academic themes (Sonntag & Ohr, 1996: 331).

3.2 Transferability of information literacy competencies from high school to tertiary education

Many secondary school educators do not know what information literacy entails. Teacher-librarians do not have enough contact time, if any, with learners to teach information literacy. Little or no collaboration between educators and teacher-librarians and the absence of formal benchmarks for information literacy skills are some of the reasons why information literacy is not catching on at schools (Merchant & Hepworth, 2002: 81 and Whelan, 2003: 51 – 53).

It can therefore not be presumed that learners leaving secondary schools will be prepared for tertiary studies. Academics as well as university librarians experience that undergraduates do not possess adequate information skills to complete some of the required course work (Caravello, Herschman & Mitchell, 2001: 193; Curzon, 2000: 483; Fitzgerald, 2004: 20 and Nofsinger, 1989: 54 - 55). According to Castro (2002: 30) “students arrive at information-rich academic libraries encountering electronic databases, online catalogues, web sites and multimedia but they are without information skills to gain knowledge from it”.

This view is supported by Atkins (2002: 4) when she indicates that an aspect like information available on the Internet and electronic databases alone is vast and that students need initial training and assistance to utilize it effectively.

Underlying problems experienced by students who find it difficult to handle information are poor reading techniques, inability to find relevant information in the library or elsewhere, the uncritical acceptance of information as well as the insufficient synthesising and technical management of academic writing assignments (Van der Walt, 1992: 40).

Studies done by Eisenberg (1991: 34) and Whitmire (2001: 381) indicated that high school learners who received instruction on library use, effective search strategies and information-gathering skills scored significantly higher on a college library research skills test than students who did not receive training. They felt more confident to enter college and identified the library media specialist (teacher-librarian) as the linking agent between school and college.

For many students the leap from school to tertiary institution is too difficult to overcome without sufficient training. Ercegovac (2003: 77 – 78) went so far as to suggest that partnerships between higher education and secondary school librarians must be formed to bridge the knowledge gap. Studies like De Jager (1997: 29) and Fitzgerald (2004: 19) indicate that students who are not library users or not information literate will struggle to, among other tasks, synthesize ideas from multiple resources and it will impact seriously on students' academic achievement in general.

The challenge to produce information literate graduates is according to Rockman (2004b: 237) becoming acute because of the following factors:

- the range of information choices continues to broaden
- technology continues to influence the behaviour patterns of learners
- employer needs are becoming more complex and global
- trends towards distributed education (distance learning) affect the way in which instruction is delivered
- student populations are becoming more culturally and linguistically diverse, with uneven academic preparation

- financial restraints make it difficult for institutions to maintain resources
- curricular change to keep pace with current trends and needs.

3.3 Information literacy competency standards for higher education

The American Library Association published the five standards, performance indicators and outcomes necessary for higher education in the year 2000 and a revised edition in 2005 (American Library Association. Association of College and Research Libraries, 2005e: 8 – 14). It extends the competencies that learners must master at school level. After reviewing the American standards, the Council of Australian University Libraries published what they regarded as information literacy standards for higher education. It consisted of seven, compared to the American's five standards. The additional standards address the ability to control and manipulate information and the intellectual framework for lifelong learning (Council of Australian University Librarians, 2001: 1). The two sets of standards, performance indicators and outcomes for higher education are listed respectively in Appendix A and Appendix B.

The importance of these information literacy standards for higher education lies in the fact that it provides frameworks for teaching information literacy as well as assessing the information literacy level of individuals (Snelson & Stillwell, 2001: 226). The standards can be used to develop information literacy programs and will ensure that information literacy training efforts will be unified and will contribute towards the clarification of desired outcomes (O'Connor, Radcliff & Gedeon, 2001: 163).

The main objective of information literacy programs is to develop students who can evaluate information critically which they encounter and students who will continue to use their acquired skills to confidently handle new information challenges throughout their lives (Grafstein, 2002: 199).

3.4 Information skills for the electronic world

According to Barry (1997: 225 - 227), Christensen (2004: 617), Farber (1999: 175) and Warnken (2004: 153 – 155) the need for information skills and proficiencies are intensified by the complexity, the rapid changing and the impact of the electronic environment. Because the variety of information resources has increased, students are exposed to more potential information resources. This often leads to information overload and/or anxiety and the propensity for students to use Internet search engines as the sole source for research with the coinciding temptation to cut and paste from sites encouraging plagiarism and academic dishonesty (Georges, 2004: 34 and Orr, Appleton & Walling, 2001: 457).

It is expected of today's students to organize and deliver information to an individual user's desktop. To accommodate the volume of electronic information, students must learn how to manipulate computer technology, use information communication technology as tools, to retrieve and evaluate information effectively (American Library Association. Association of College and Research Libraries, 2004: on-line).

Information literacy instructors must use the new opportunities created by the virtual university environment by restructuring curricular and creating dynamic learning experiences in the information age (Buchanan, Luck & Jones, 2002: 148). Parts of information literacy training should be changed from instructor-led demonstrations to hands-on instruction in computer laboratories (Julien, 2000: 518 & Van Beek, Been & Hurts, 1989: 327). Because of the huge electronic environment created by information technology, Brown, Murphy & Nanny (2003: 386), Buschman & Warner (2005: 12 – 18) and Tise (2000: 58) argue that students need more training in:

1] the evaluation of information (evaluation of quality, filtering out excess and relevancy for specific need),

2] knowledge and operation of resources / information technology literacy (e.g. online catalogues) and
3] linguistical and logical interaction skills (formulation of search strategies and the ability to read, decode and interpret electronically provide information).

3.5 Conclusion

Both secondary and tertiary education systems internationally have recognized the validity of the construct of information literacy. Producing information literate graduates who are critical thinkers and life long learners are becoming so important that it is starting to play a role in the accreditation of higher education institutions. Information literacy should be part of higher education institutions' missions and should be a campus-wide responsibility. The need for information literacy training at tertiary level originated from ineffective or non-existing instruction in most primary and secondary schools.

A clear understanding of the concept information literacy by all role players should be reached. A framework for teaching information skills with good teaching practices as well as a framework for assessing it must be set.

Collaboration and partnerships between information literacy instructors, whether librarians or lecturers, and academics and between faculty and the academic library is necessary. As educators faculty and librarians must within the demands of rapid technological change, embrace information literacy as indispensable to student's needs.

4. INFORMATION LITERACY EDUCATION IN HIGHER EDUCATION

4.1 Introduction

Over the last few years information literacy or information competency has become internationally recognized as a crucial skill for students at higher education institutions. It promotes the vision of what all universities want, work for and hope for. The teaching of information literacy should be an integral part of the formal curriculum of all educational systems and a cross-campus objective (Behrens, 1990: 357; Bruce, 2000a: 209; Owusu-Ansah, 2003: 219 and Swartz, Carlisle & Uyeki, 2007: 109 – 122).

Most tertiary institutions will base their formal structured courses in information literacy on the following five assumptions (Brancolini & Heyns, 1994: on-line and White & Quinn, 2000: on-line):

- The information environment is too complex and changing too rapidly to expect students to acquire information literacy without a planned, cumulative instructional program
- The most effective learning about library and information use is tied to a specific information need and is often discipline-specific
- Students learn critical thinking and research skills in their disciplines as preparation for a lifetime of changing information needs to cope in society and the workplace
- Students have different learning styles and acquire information in different ways. Any information literacy program must accommodate these differences by using a variety of approaches that provide practice in these skills
- Collaboration between university libraries and faculties is needed to ensure that all students are reached.

Special attention should be given to high-risk or at-risk students that are students with low high school grades or low scores for the scholastic aptitude tests (Swartz, Carlisle & Uyeki, 2007: 109).

4.2 Information literacy learning outcomes

Teaching by learning outcomes focus on what students will learn, understand, what they are able to do, what skills they developed as well as the attitudes that affect how they work in future. It ensures that active learning is part of the training program and that focus will shift from the trainer's knowledge to the student's understanding and capabilities.

The ALA's Information literacy standards for higher education (American Library Association. Association of College and Research Libraries, 2005e), the Council of Australian University Librarians (2001) as well as the Society of College, National and University Libraries (2004) list numerous specific learning outcomes for every information literacy standard. For each competency indicators or descriptors are identified that demonstrate that students have achieved that outcome.

Although researchers like Baker & Curry (2004: 103), Buchanan, Luck & Jones (2002: 154 - 159), Davidson, McMillen & Maughan (2002: 110 – 119), Fiegen, Cherry & Watson (2002: 309 – 314), Gratch-Lindauer, 1998: on-line) and Machet & Behrens (2000b: 19 – 21) developed specific outcomes, most information literacy programs base their outcomes on the guidelines supplied by the Library Associations.

According to Ratteray (2002: 370) information literacy is a meta-outcome in higher education and is invoked during all other learning outcomes. It is aligned to institutional goals and desired educational outcomes. It is therefore necessary that information literacy instructors must collaborate with faculty members to establish shared learning outcomes.

4.3 Objectives for information literacy training

The outcomes identified for information literacy standards in higher education were used by the Association of College and Research Libraries to develop objectives, purposes and goals for teaching sessions or

programs by academic librarians (American Library Association. Association of College and Research Libraries, 2005b: on-line). These objectives are used as guidelines as to what skills a student should master and what he or she should know. Various rubrics were developed to evaluate the levels of skills mastered by individual students.

4.4 Information literacy training curriculum

Although the contents of different individual information literacy initiatives vary, the information literacy standards and learning outcomes serve as a framework for teaching and will ensure uniform learning outcomes and unified training efforts. Researchers like Donaldson (2000: 244), Jacobson (2004: 142 – 151); Kasowitz-Scheer & Pasqualoni (2002: on-line); Lawson, 1999: 74 – 75; Prozesky (1999: 57), Ratteray (2002: 370 – 371) and Thompson (1998: 128 – 129) developed their own programs and shared details of their program contents. More details about program contents can be found in Appendix C: List of some Information literacy programs.

Important though, is to remember that for information literacy education to be successful, a learning environment to accommodate students with diverse abilities and needs (Breivik-Senn & Senn, 1998: 43) and progression over time from basic to more advanced skills (Barry, 1997: 228) is needed. Universities like University of Rhode Island agreed with Barry and developed multi-year information literacy courses (MacDonald, Rathemacher & Burkhardt, 2000: 246). The diverse backgrounds of students - especially their English proficiency - must be appreciated and programs must be flexible enough to adapt to individual students if necessary (Gratch-Lindauer & Brown, 2004: 173 – 174).

4.5 Best practices of information literacy programs

Because a wide variety of practices across library sectors (school, tertiary, public and special libraries) and between individual libraries and

institutions existed, some confusion on what the best program and practices developed. The ALA launched an extensive project to develop criteria for assessing information literacy programs and to identify model programs and best practices. The Association of College and Research libraries published a comprehensive guideline that illustrated characteristics of information literacy programs that illustrate best practices (American Library Association. Association of College and Research Libraries, 2005a) as well as a guideline on best practices and assessment of information literacy programs (American Library Association. Association of College and Research Libraries, 2004). It presented a set of ideas that are not prescriptive, but can be used when developing or assessing an information literacy program.

Some researchers like Asselin (2004: 64) and Breivik-Senn & Senn (1998: 43) reflected on programs offered and listed specific best practices that will improve teaching. It is also important to realize that a program cannot be stagnant. New developments like the use of new technology should be incorporated into existing courses (Bernnard & Jacobson, 2001: 138 and Hugo, 2003: 49).

4.6 Models of information literacy training in the undergraduate curriculum

4.6.1 Entrance requirement model

To indicate the importance of information literacy, students are required to take an information literacy test before they enter tertiary education. The students, who do not have the required level of skills, must attend a remedial program before they register for other courses (Curzon, 2004: 42 – 43).

Many institutions find this model too harsh and will rather determine the baseline skills of all incoming students. Students who acquired the required competencies during their school education should be able to be exempted from additional information literacy courses. For students who

did not acquire the needed information skills during their schooling, the curriculum must provide teaching and learning opportunities.

4.6.2 Introduction model

An introduction course will introduce beginning or first year students to basic concepts, the library, information resources, information technology, information retrieval and research skills. The model varies from a once off seminar to all first year students at the beginning of the year to integrated sessions in introductory courses to majors. According to Brown et al. (2004: 400) the main aim of such an initiative is to familiarize students with the library, to encourage them to ask librarians for assistance and to decrease their anxiety about the library and academic demands in general.

Incoming or first year students are targeted because it is important to reach them early in their study career to ensure success in upper-division studies (Lawson, 1999: 73 and Sullivan, 2004: 71). Although large numbers of students can be reached if the introduction model is used, it might not be enough to ensure that students master information literacy skills (Curzon, 2004: 38). Fitzgerald (2004: 22) agrees by indicating that information literacy competence increases over the year as the student develops academically.

4.6.3 Generic model or information literacy course

Traditionally it was the responsibility of academic librarians to offer library orientation, user education and bibliographic instruction courses to both academics and students. The aim was to develop independent users who are able to find and use information in the library. Since the 1980s these courses were adapted into information literacy programs.

Following the traditional role of the academic library, librarians, lecturers from departments of Library and Information Science and / or information literacy experts are teaching information literacy to students in a compulsory, credit-bearing, stand alone, generic information literacy

course. Input from faculties is used to include professional or subject education in the information literacy training. Course contents are adapted to suit the disciplines in which students belong (Curzon, 2004: 40).

Followers of this model claim that especially credited stand alone information literacy courses will ensure that all students graduate as information literate individuals. Specific skills can be taught and assessed to reach higher levels of cognitive skills. Active learning techniques to achieve critical thinking competencies and effective use of information resources for academic inquiry can be used to ensure quality and cohesiveness of a student's academic life. Feedback can be given to students to emphasise significance and proficiency (Bothma & Britz, 2000: 235; Jacobson & Mark, 2000: 261; James, 2000: 355 and Machet, 2005: 193).

4.6.4 Integrated curriculum or general education model

For this model information literacy training is embedded in an academic course – usually in the form of teaching research skills for a specific assignment or research paper (Byerly, Downey & Ramin, 2006: 589). Responsibility for the teaching is shared by the academic and information literacy instructor to ensure that professional lectures include information literacy aspects. After training initiatives by information literacy experts, lecturers supervise students in aspects like finding relevant information, using correct reference techniques, preventing plagiarism and synthesising new information into their knowledge base (Hearn, 2005: 227).

Research such as Baker and Curry (2004: 96), Conteh-Morgan (2001: 30 – 31), Rockman (2004a: 16), Salisbury and Peacock (2000: on-line) and Warmkessel and McCade (1997: 80) indicate that information literacy skills are most effectively learned when they are immersed in learning within a subject or professional area. Course-integrated information literacy instruction will mean that information literacy teachers will work within existing academic and credited courses. In collaboration with faculties,

lecture time will be allocated to weave information literacy skills into the course content to ensure that students gain experience in the information infrastructure and technology in their subject discipline (Arp et al., 2006: 18; Brower, 2004: 81 and Christensen, 2004: 616).

Researchers like Harrison and Rourke (2006: 599) are of the opinion that information literacy should be taught each year in all the levels of a degree program. The education will become more complex as students advance in their studies.

According to Curzon (2004: 38) and Jacobson and Mark (2000: 259) the dangers of an integrated model are that information literacy goals might become dispersed, that because not all lecturers will value information literacy, a hit-or-miss-situation might develop, that students might graduate without mastering the required skills or that not enough time is allowed to address the broad range of required critical thinking skills needed.

4.6.5 Web-based on-line tutorials

Variation of the integrated model is found where librarians will support faculty by developing tools like guidelines for research assignments or on-line tutorials to support information literacy teaching in the class room. With the availability of information technology web-based and/or on-line tutorials are used to supplement or replace live instruction (Davidson, 2001: 157 – 162; Donaldson, 2000: 237; Jacobson & Mark, 2000: 256; Roberts, 2003: 10 and Rogers & Abbott, 2000: on-line). These tutorials are often self-paced, interactive, visual engaging, game-like and an enjoyable learning experience (Armstrong & Georgas, 2006: 495). The benefit of computer-based tutorials is that it can reach large numbers of students at the same time and can be used for distance learning (Gutierrez & Wang, 2001: 208; Noe & Bishop, 2005: 173; O'Hanlon, 2002a: 10 and Yi, 2001: 203).

According to Jacobson & Mark (2000: 257) most of these tutorials tend to be generic and not targeted to specific course content. It will cover key

components like research skills, evaluating internet sites, virtual tour of the library and how to avoid plagiarism (Jacobson, 2004: 151 and Matoush, 2006: 158 - 159). On the other hand, Cameron (2004: 225) is of the opinion that students can complete the tutorials successfully without entering the library – strengthening the perception that academic libraries are not needed. Another drawback might be that academically disadvantaged students will struggle to master certain skills without personal contact with a lecturer or librarian.

4.6.6 Learning outcomes model

Many tertiary educational institutions include information literacy in their educational mission. Information literacy forms part of the learning outcome goals and assessment of all the departments and faculties. Lecturers are responsible for teaching and assessing information literacy skills. For learning outcomes to be realized all lecturers must have the same understanding of what information literacy entails and how it is taught, all students must enter tertiary education with the same levels of information literacy and both lecturers and students must be aware of what outcomes are occurring on what levels (Curzon, 2004: 39).

4.6.7 Demonstration of mastery model

For the demonstration of mastery model, students must demonstrate that they mastered information literacy skills by passing an information literacy test. Although they will not receive credits for passing the test, students will not be allowed to graduate before passing the test. Tertiary institutions in favour of this model developed on-line, usually web-based tests that will supply quick feedback to the institution as well as the students. Students may retake the test until they pass.

These tests are not resource-intensive and will reach all students, but according to Curzon (2004: 40) the skills level achieved using this model will not be very advanced.

4.6.8 Other models

Julien (2000: 513) reported on other models like pathfinders, self-paced library tours, easy workshops and videos used in Canadian academic libraries. Brier and Lebbin (2004: 383) refers to the use of short stories to teach abstract concepts, memory and the meaning and purpose of being information literate. It should be noted though that once off, time-restricted initiatives not placed in context of the information literacy process will not result in information literate students.

4.7 Collaboration and partnerships

For all the models partnerships and collaboration between the information literacy teachers and faculty members are essential (Sun, 2002: 216). For any information literacy initiative to be successful, the information literacy teacher should play a role in faculty curriculum development (Rader, 1995: 270). Goals and visions should be shared by all role players. Roles for each partner must be defined clearly, planning must be comprehensive and responsibilities and longitudinal relationships must be shared (Georges, 2004: 35). According to Fisher, Hutchins and MacPherson (2001: 205) an information literacy program must support and enhance efforts from academics rather than being an add-on section or session.

Much discussion on which model ensures the best result is found in the literature (Johnston & Webber, 2003: 342 - 344). The basis for success of any information literacy teaching is that it must be an institutional initiative, thus being part of the tertiary institution's mission as well as a university-wide responsibility (Rockman, 2004b: 237) and that experts from different areas must be involved (Van der Walt, 1992: 39).

Grafstein (2002: 197) is of the opinion that an information literacy program linked to discipline-based knowledge and research will equip students the best. On the one hand they will gain knowledge about the subject and research practices for that particular discipline. On the other hand they will master the broader, process-based principles of research and

information retrieval that is applicable generally across disciplines. It is however also true that critical thinking skills and the capacity for lifelong learning (the ultimate goals of information literacy programs) are not related to specific disciplines and seen as more general or generic skills.

Griffiths and Brophy (2002: on-line) and Johnston and Webber (2003: 347) argue that even with fruitful partnerships between librarians and lecturers, students will experience incomplete information literacy education if they are not required to pass a formal credit bearing course. This course should form a basis with generic skills followed by a framework of information literacy training throughout a student's career by academic staff.

4.7.1 Role of the academic library

Traditionally the academic library played a role in what was called user education. User education consisted of library orientation (introducing new students to library facilities and services) and how to locate information in the library: using the catalogue, searching databases, finding books and printed journals on shelves (Fidzani, 1995: on-line and Somi & De Jager, 2005: 262). User education was usually delivered as a once off lecture of maximum sixty minutes without much hand-on activities. With the aid of technology libraries started to use Web-based instruction for virtual tours of the library and tutorials to help teach the use of on-line catalogues and databases (Parang, Raine & Stevenson, 2000: 271 & 273).

At the beginning of the twenty-first century new technology enabled librarians to move from the teaching of specific information resources and to move information retrieval beyond the library. The teaching of critical thinking skills involving the use of information imbedded in course-integrated information literacy instruction (Kasowitz-Scheer & Pasqualoni, 2002: on-line; Rader, 2002: 243; Snelson & Stillwell, 2001: 229 and Varner, Schwartz & George, 1996: 355) enabled librarians to produce students who are critical thinkers, problem solvers, independent

information seekers and lifelong learners (Grafstein, 2002: 199 and Somi & De Jager, 2005: 260).

The teaching role of librarians is questioned by many (Owusu-Ansah, 2004: 5). At certain universities the responsibility for information literacy education rest with faculty alone. Librarians are not involved (Kobritz, 2003: 207). Researchers like Bundy (1999: 233) and Julien and Boon (2002: 148) argue that although librarians are not trained in effective instruction methods, they are most familiar with the issues at stake, they can supply expertise and they have experience in the framework within which goals could be accomplished. Librarians should therefore ideally be actively responsible for information literacy teaching or at least some aspects thereof. Tipton and Bender (2006: 390) for example reported on successful collaboration between their research library and the writing centre to benefit the academic writing skills of under-prepared students. Librarians are best equipped to develop a program with structure and content that will ensure the training in information literacy of every student and convince the entire university of the viability and effectiveness of that program (Owusu-Ansah, 2004: 5 and Owusu-Ansah, 2003: 226).

The teaching role of the librarians and the need for evaluation of libraries based on user perceptions and satisfaction as well as information literacy standards based on outcomes assessment was emphasised by many researchers (American Library Association. Association of College and Research Libraries, 2002: on-line and Iannuzzi, 1999: 304). Evaluation bodies like accrediting agencies are requiring evidence of quality measured in outcomes from universities. As the academic library is part of the university, attention must be given to qualitative analysis.

Libraries are essential elements in resource-based learning. Librarians are at the forefront of new developments related to paper-based resources [books, study units, course readers], computer-based material [on-line tutorials, multimedia], networked resources [networked study programmes, computer conferences] and media-based material [audio tapes, video

tapes, transparencies and slides] (Julien, 1998: 311 and Van Vuuren & Henning, 2001: 81 - 82).

If information literacy programs are integrated across the academic curriculum, collaboration between librarians and academics is needed to ensure effective teaching and learning. Grassian and Kaplowitz (2001: 354) emphasise this collaboration and are of the opinion that librarians, classroom instructors as well as administrators must form a strong partnership. Academics should inform librarians about students' assignments and research that involves the library. Librarians should ensure that academics are aware and can use effectively new information technologies within the virtual university. What is expected of the librarian and what teaching role he or she must play must be sorted out. Joint decisions on curriculum development and learning outcomes are necessary (Barnhart-Park & Carpenter, 2002: 15 and Black, Crest & Volland, 2001: 215).

Grafstein (2002: 200) and Lawson (1999: 74) are both of the opinion that librarians should concentrate on generic information skills to ensure a good base for academics to handle the discipline-specific skills.

Fiegen, Cherry & Watson (2002: 316) summarized the collaboration by indicating that faculty will supply course objectives and assessment instruments. Librarians will supply information literacy standards and search strategies. Together they will match course and information literacy objectives and assessment.

4.7.2 Problems experienced with collaboration

Although many successful partnerships have been reported by librarians like Larkin and Pines (2005: 40) some major problems like inadequate numbers of professional staff, limited time, insufficient facilities and lack of support from faculty teaching staff have been experienced by academic libraries when information literacy education are implemented (Fidzani,

1995: on-line; Julien, 2000: 520; Julien & Boon, 2002: 145; Mpendulo et al., 1999: 38 – 39; Rawlins et al., 1999: 55 and Sult & Mills, 2006: 368).

Davidson (2001: 162), Jackman (2002: 30) and Julien (2000: 520 - 521) reported on a large percentage of faculty members who do not value information literacy, who are unwilling to form positive relationships with librarians and who resist the integration of information literacy into the academic curriculum.

Although researchers like Machet (2005: 193) proved that senior and post graduate students did not master the required lower-order cognitive skills and that certain practical skills in retrieving information are absent, both Dunn (2002: 26) and McGuiness (2006: 573) found that most academics will assume that the requisite information skills will be acquired as students work their way through their degree. By completing research assignments academics will presume that students will over time pick up the skills and that formal information literacy training is not necessary.

This fact is strengthened by Owusu-Ansah (2003: 225) when he indicates that faculty will rarely take their clues and marching orders from library associations. "…. the relative weakness of librarians to assert a position that often causes the retreat to debate definition and content, instead of evoking and allowing practice to shape the concrete forms that information literacy instruction should take" (Owusu-Ansah, 2003: 226).

Because of time constrains and many competing interests, many academics fear that if information literacy training is integrated into the curriculum, it will mean that they must sacrifice time for librarians to teach in their courses and will ultimately cover less content (Curzon, 2004: 29 and Westley, 1991: 29). To compensate most academics will agree that information literacy must be taught at first year level, but that integration in other years is unnecessary (Gullikson, 2006: 583). If students are trained at the beginning of the year, some students will not be able to apply mastered skills when research for assignments is required further on in

their academic life (Zondi, 1992: 204). This inadequacy of training by librarians, that is not course integrated, should be realized and links to research needed for assignments should be investigated.

Another barrier faced by librarians is the lack of interest from students in becoming information literate (Julien, 2000: 521). If academic and faculty do not see it as part of the formal curriculum, students will not participate in information literacy initiatives on a voluntary basis.

4.8 Impact of information literacy education on academic performance

Research by Breivik-Senn and Senn (1998: 130), De Jager (1997: 26), Kaplowitz (1986: 11), Maughan (2001: 80) and Williams and Wavell (2001: 69) indicate that information literacy, especially library usage can impact positively not only on information handling skills, but also on learning and academic achievement. Students not experiencing library anxiety and willing to seek help from librarians will be academically more successful (McDermott, 2005: 419; 435).

According to Gratch-Lindauer (2005: 715) students who use the library frequently reflect a studious work ethic and engage in academically challenging tasks that require higher-order thinking.

4.9 Conclusion

Information literacy in higher education is a not a trend that will fade away with time. Higher education institutions must ensure that information literacy training is part of the educational curriculum and that information literacy outcomes are part of the learning outcomes.

A prescribed model program for information literacy training does not exist. Various programs with varying practices are found at higher education institutions. Various learning outcomes, objectives, curriculum contents

and best practices guidelines are supplied by Library Associations. Various models for information literacy training in higher education exist. The models vary from courses with more generic skills training offered by the academic librarians to integrated courses where information literacy training are part of an academic course and teaching are shared by an information literacy instructor and faculty.

What particular model or approach will be implemented will depend on institutional factors like audience, purpose, budget, facilities and staffing. A combination of more than one model might be best to suit the needs of a particular institution's students.

For successful information literacy training a common understanding of what information literacy is, institutional commitment to critical thinking, problem-solving and information skills as educational outcomes, long-term commitments by both the academic library and faculty and administrative support are of cardinal importance.

Although evidence of academic libraries playing major roles in information literacy training at tertiary institutions are found, most academic libraries can be more actively involved. A barrier that must be overcome is the misconception of academics that students will acquire information skills during their academic life without formal training. Despite valuable work done by various librarians and individual efforts at various institutions, it seems as if not enough has been done to ensure that higher education institutions are producing information literate students.

5. ASSESSING INFORMATION LITERACY

5.1 Introduction

Assessment can be defined as any process of gathering concrete evidence about the impact of and functioning of undergraduate education. It is however most often associated with the measurement of educational outcomes and student performance while he or she is enrolled in course work (Dow, 1998: 277).

There are two aspects involved when information literacy is assessed. On the one hand it is used to determine whether students have mastered the skills and knowledge associated with information literacy. On the other hand it is a tool to measure how well the institution has accomplished its educational goals and mission of producing students who can perform satisfactory in any work place in the information society (Hernon & Dugan, 2002: 3). Mark & Boruff-Jones (2003: 481) emphasise this by stating that programs and instructors must be evaluated according to the students' abilities to transfer skills mastered in other areas of their lives.

According to O'Connor, Radcliff & Gedeon (2001: 163) libraries need a valid and reliable method of assessing information literacy skills to prove that information literacy programs are making a difference to student learning and performance.

Assessment needs to be linked to a series of activities undertaken and skills acquired over time and must be regarded as an ongoing process (Avery, 2003: 2 and Knight, 2002: 19). To assess student learning the affective, cognitive as well as the sensori-motor outcomes must be measured. The affective outcomes will be reflected in how the higher education experience influenced the individual's values, goals, attitudes, self concepts, world view, behaviour, how confident they are, what they feel they know and how they feel about doing research. The cognitive outcomes will measure the acquisition of knowledge and skills in other words, what do they know and what can they do. The sensori-motor

outcomes will measure the perception and action taken to achieve a goal (Gratch-Lindauer, 2003: 35 and Jakobovits & Nahl-Jakobovits, 1990: 448).

Assessing information literacy is a difficult issue. Not only does it incorporate conceptual, technical and critical thinking skills, but the responsibility of the teaching and assessment is shared by information literacy tutors and academics (Iannuzzi, 1999: 304). Another factor contributing to the problem is that information literacy skills contain many variables and are expressed in abstract terms (Dunn, 2002: 27).

Smith (2001: 31) is of the opinion that in the case of information literacy, the focus of assessment must be on the competencies and proficiencies of students in a program and not individual courses. Faculty will have to accept responsibility for a broader set of learning outcomes achieved over a period of three to four years. James (2000: 355 – 356) has a different opinion and argues strongly that transferable skills like information literacy are better assessed if they are separated from other performance criteria. Reasons for his argument include that each skill component can be individually judged, feedback about student performance is easier, the significance of each skill can be emphasised and various skill components can feed into a more composite view of the student's skill capability.

Several researchers (O'Connor, Radcliff & Gedeon, 2001: 164 – 166) indicated that formal methodologies are still not being applied to any significant degree regarding to information literacy training. One excuse given for not assessing is the lack of well-developed standardized measurement instruments, absence of generally accepted criteria and absence of clearly defined learning objectives. Work done by the American Library Association and other researchers the past years provide enough material and guidelines, for example the Standardized Assessment of Information Literacy (SAILIS) to develop assessment tools (Mark, 2004: 254 and Rockman & Smith, 2005: 588).

Gratch-Lindauer (2004: 122 – 123) identified three arenas of information literacy assessment. They are the learning environment (involving the curricula and learning opportunities), the information literacy program components (including initiatives such as courses, workshops, reference desk services) and the student leaning outcomes (including performance measures such as tests and assignments). All three arenas must be taken into account when information literacy assessment is planned and applied.

5.2 Brief overview of information literacy assessment

According to Dow (1998: 277) by the end of the 1980s American tertiary institutions used assessment for documenting institutional effectiveness. Because of demands for greater accountability measures of performance weighted against sets of standardized indicators were introduced in the 1990s. In several universities a proficiency examination to satisfy anticipated graduation requirements was developed. It tested what students know as well as what they can do (Gratch-Lindauer & Brown, 2004: 167 - 172).

Libraries have traditionally used resource-based input and output measures to define quality and impact on student learning. Statistics and opinion questionnaires formed the basis for determining quality of the library collections and services. Astin (1987: 101) argued that quality can not be inferred from opinion surveys. It should be achieved by increased student activity, faculty participation in learning and what and how much students learn.

With the information literacy movement, libraries realized that in teaching students how to locate, evaluate and effectively use information when it is needed, life-long learning skills are taught and that they will not only contribute to enrich the quality of teaching but also the quality of students‘ lives (Dow, 1998: 278).

According to Rader (2002: 244) evidence in the literature on the evaluation of user instruction outcomes was minimal. Evaluation was limited to how librarians performed as teachers and what students gained in terms of finding information, compiling good bibliographies and using appropriate references. Today the emphasis is on evaluating the learning outcomes, research products and information skills of students.

5.3 Need for assessing information literacy

5.3.1 Accreditation

External bodies for higher education are requesting especially for accreditation purposes, quality assurance measured in outcomes and achievements (Baker, 2002: 3; Dunn, 2002: 26 and Iannuzzi, 1999: 304). Information literacy is playing a major role in academic development and the assessment thereof is therefore of importance (Iannuzzi, 1999: 305; Gratch-Lindauer, 2002: 14, Gratch-Lindauer, 2004: 122 and Ratteray, 2002: 371 - 372).

5.3.2 Baseline competence

Students often overestimate their information skills because they lack tools to assess their shortcomings. This emphasises the need for a generally accepted assessment instrument for testing the general information competence of all incoming students (Maughan, 2001: 71 and Miller, 2001: 302). Such a test will identify the need for information competence programs and gaps in competence. This can be rectified to allow librarians and academics to work on the assumption that students have uniform basic information literacy levels (Dunn, 2002: 27 and Young, 2004: A33).

It has become common practice to assess the information literacy level of incoming students at universities. Primarily pre-assessment tools are used to gain more information about students' existing information technology skills, navigation skills, attitudes towards readings and libraries, confidence in finding information, research skills and demographics (Miller,

2001: 304). Students who do not perform satisfactorily must complete some or other form of information literacy course by the end of their first year (DeMars, Cameron & Erwin, 2003: 255 – 257; Dunn, 2002: 26 and Lawson, 1999: 73). This ensures that they will be adequately skilled for further academic challenges.

According to Miller (2001: 304) the following general pre-conceived notions by both faculty and students can be allayed by pre-assessment of incoming students:

- Computer literacy does not equal knowledge of library research strategies or Internet search strategies
- Basic knowledge of the library catalogue does not mean students are proficient with on-line search strategies
- Students do not need information literacy training
- Students need assistance in becoming information literate

5.3.3 Improved information literacy programs

In order to ensure that students as well as lecturers see that learning has taken place, information literacy competence must be tested by either an outcomes-based assessment or as a capstone experience (Rockman, 2004b: 247). According to Avery (2003: 2), Grassian and Kaplowitz (2001: 265), Maughan (2001: 74) and Smith (2001: 31) assessment is needed to understand students, to measure the extent to which desired outcomes are achieved and to use results to improve academic programs.

Assessment of information literacy is according to Cameron (2004: 207) an opportunity to develop learning objectives, plan instruction and construct tools to measure competence. It will demonstrate what skills have been learned and identify areas where skills must be developed further. It will in other words serve as a tool to determine the efficiency of an information literacy program (DeMars, Cameron & Erwin, 2003: 261 – 262 and Herring, 1996: 31).

5.3.4 Improved university programs

According to Davidson, McMillen & Maughan (2002: 98); Dunn (2002: 26), Hernon & Dugan (2002: 15), Rockman (2002: 195), Schroeder (2003: 223) and Walton (2005: 36) results of qualitative as well as quantitative assessment of information literacy and information-seeking skills and how students find, evaluate and use information can be used to compel higher education institutions to include information literacy in the general education core curriculum. This will assist to develop confident, self-directed and independent lifelong learners.

5.4 Theoretical framework for assessing information literacy

Benchmarking information literacy programs is a way of measuring performance of students against a set of standards or good practices in order to give the program credibility (Atkins, 2002: 21 – 22 and Davidson, McMillen & Maughan, 2002: 99). Such a benchmark for higher education information competencies is provided in the form of best practices for assessment of information literacy by the Association of College and Research Libraries (American Library Association. Association of College and Research Libraries, 2004: on-line).

For each goal specific objectives and practices to achieve the goal were specified. The performance measures and learning outcomes in the standards provides a framework for assessing the information literate individual. They offer guidance to course instructors when designing activities and assignments to measure information competence (Fiegen, Cherry & Watson, 2002: 308). It is not easy to create performance outcomes and objectives that will reflect the multiplicity of skills involved. More than one form of testing assessing various aspects of information literacy might be needed (Somerville et al., 2007: 8 – 9).

Assessment of information literacy competencies must be aligned with learning outcomes. Before practical assessing tools can be developed it is necessary to define learning outcomes, select measures and to collaborate with academic departments on shared outcomes. For practical

assessment of specific information literacy competencies, specific learning outcomes must be aligned (Doyle, 1993: 138 – 142). It can therefore not be only one vague, theoretical learning outcome. Learning outcomes will be indicators of quality and will measure how objectives are achieved (Baker & Curry, 2004: 103; Farmer, 1997: 11; Hernon & Dugan, 2002: 64 – 67; Maki, 2002: 9 and Smith, 2001: 29).

Learning outcomes must be specific, achievable and assessable. Both formative (provides feedback to students about accomplishments, how they mastered contents and skills as well as feedback on how successful teaching was) and summative (provides feedback on how the training affected students and their performance) assessment is needed (Roselle, 1997: 390). According to Knight (2003: 201) information competence should be linked to individual departmental learning objectives.

All students are expected to demonstrate control over the outlined competencies. Some will master greater proficiencies and or speed than others (Cherry, Fiegen & Watson, 2002: 307). According to Haberle (2002: 28) it is important that learners must be evaluated in a holistic manner. Affective, cognitive as well as physical domains must be tested.

Taking the above mentioned into account researchers like Franks (2003: 132 – 147), Gaus & Kinkema (2003: 161 – 171), Knight (2006: 43 – 55) and Warmkessel (2003: 251) created rubrics to assess students. From the outcomes, performance indicators were pinpointed. From these indicators specific learning objectives were formulated. These objectives were used in turn to create criteria for assessing performance. As the degree of competence will vary, rubrics were formulated. Each objective will have rubrics to indicate the level (e.g. beginning, proficient or advances) of the skill mastered. Each level will have again specific criteria reflecting the range in the quality of the performance. The score determined must be valid, reliable and fair. A combination of rubrics can be applied to various information literacy skills, for example academic essay writing which will include the research process.

The information literacy standards must however be seen within the higher education institutional mission. According to Grassian and Kaplowitz (2001: 266) the mission statement is the starting point for the assessment/evaluation/revision cycle. The mission of the institution will determine which specific goals must be reached. These goals can be turned into learning outcomes that can be assessed.

According to Sayed and De Jager (1997: 8) the mastering of information literacy skills is an integrated part of an active, learner-engaged and critical thinking process of generating knowledge. Independent learning like assignments is needed to foster information literacy (Bruce, 2003: 91).

As cognitive thinking skills are involved it is difficult to measure information literacy. In an item response test for example, you can not merely count the number of correctly answered items, you should examine the underlying trait. For every objective, several specific skills or items should be used to demonstrate understanding (Dunn, 2002: 27 – 30 and O'Connor, Radcliff & Gedeon, 2001: 167 – 168).

Researchers like Farmer (1997: 12) demand that with information literacy outcomes authentic assessment is necessary - that is true to life and reflecting lifelong learning skills. Students in other words, must not only be able to describe how to use the library catalogue, they must be able to use it in order to find information. Stripling (1999: 46 – 49) identified eight guidelines for authentic assessment of information literacy:

- Assessment of information literacy should be tied to content learning
  - Skills must be mastered while students are learning content
- Assessment should measure students' ability to "do " as well as to "know", thus involving knowledge and actions
- Assessment products and experiences should be as real as possible. It should require students to think and make

connections, both to what he or she already knows and to how the learning can be applied to real life

- Assessment must take into account the overlapping and recursive nature of the inquiry process and allow for different students to use different ways of finding answers and solving problems
- As assessment must evoke reflection, reflection techniques must be built into the process
- Assessment must involve qualitative measures, assessing selection, analysis and evaluation of information
- Assessment must demand original, thoughtful and ethical work. Plagiarism must be prevented
- Assessment should focus on lifelong learning ensuring that students want to learn

5.5 Measurement tools for information literacy assessment

In order to ensure that students as well as lecturers see that learning has taken place information literacy competence must be tested. Rockman (2004b: 247) is of the opinion that the test must be either a formal outcomes-based assessment as a capstone or class room experience.

In the new information technology world, students are expected to do more than write tests and examinations. Traditional methods of evaluation like test, multiple choice, fill-in-the-missing-word will test concrete knowledge and not the ability to use a certain skill in a real life situation (Avery, 2003: 2).

New products and performances force the information literacy instructor to find new and fair ways to evaluate and measure information literacy (Repman, 2002: 12). It must be student centred and proactive. Any measurement tool should be the result of collaborative planning by librarians for subject expertise, by assessment specialists for expertise on

item writing, test reliability and analysis of results and by faculty for suggestions (DeMars, Cameron & Erwin, 2003: 257).

Developing a reliable survey instrument might be a big barrier to successfully assess information literacy levels (Mark & Boruff-Jones, 2003: 481). Various measurement tools in use will test different information competencies (Mitchell & Viles, 2001: 310). Examples are research skills survey done by Armstrong (2003: 53 – 59), Web-based information literacy competence of incoming students by Dorner (2003: 103 – 107) and finding resources for research in local rural libraries by Feldmann (2003: 119 – 121). It is envisaged that a measuring tool that is standardized, contains items not specific to a particular institution, easily administered, has been proven valid and reliable, assessed at institutional level and provides both external and internal benchmarking will be developed in the near future. The Association of College and Research Libraries proposed to identify criteria for assessing information literacy programs in undergraduate education and to select benchmark programs (American Library Association. Association of College and Research Libraries, 2002: on-line).

Institutions must be prepared to be versatile and flexible in their ability to use a variety of different assessment techniques.

5.5.1 Formal evaluation

Although no standardized information literacy test exists, formal assessments like tests, portfolios and projects (Baker & Curry, 2004: 129) are employed when information literacy is a credited course or forms part of an academic course. Institutions have developed tests locally to formally evaluate students on a theoretical as well as performance basis. Gratch-Lindauer (2003: 28 -29) gives a short overview of various multiple-choice and short-answer information literacy online and paper-copy tests that are in use. A pass mark will indicate that the student reached an acceptable level of information literacy.

According to Dunn (2002: 27) formal “academic” testing of information literacy is static and will test concrete knowledge. It will not assess the effectiveness of student search skills and competencies in real life situations. Language, culture and context issues might be a further problem.

5.5.2 Exercises or tasks

Knight (2002: 17) reported on the use of an exercise at the end of a tutorial. Students are given a test to measure learning of information given in the tutorial. The format of the test can vary from an online multiple choice test to writing down answers to demonstrate understanding or mastering of skills. Results are communicated to the student to indicate if he or she fared satisfactorily. It is important however that students should be given opportunities to practice skills before they are assessed. It is therefore sometimes necessary to allow a time span between the learning of a skill and the evaluation thereof.

5.5.3 Embedded assessment

According to Rockman (2002: 192) embedded assessment is the examining of a student’s work within a course or discipline. It is an assessment technique used to prove that students have retained and effectively applied knowledge and skills from one course to another. Hernon and Dugan (2002: 94) for example suggest that bibliographies of faculty papers can be examined to evaluate bibliographic correctness and factors like relevance, authority and currency of sources cited.

5.5.4 Observation

Students can be observed while they are performing a task like retrieving and selecting information for an assignment. Observation will supply information on nonverbal behaviours (Dunn, 2002: 34 and Hernon & Dugan, 2002: 95). When large numbers of students need to be assessed, this method of evaluating can become time consuming.

5.5.5 Pre- and post-tests

As librarians and academics can not work with the assumption that all students have uniform basic information literacy levels, Knight (2002: 17), O'Connor, Radcliff and Gedeon (2002: 528) and Rockman (2002: 193) indicated that a pre-test can be used to measure the benchmark or baseline level of students' library knowledge, previous research experiences and self-confidence in the use of the library and general information literacy level. Comer (2003b: 89 – 102) as well as Noe & Bishop (2005: 173 – 187) recorded experience with pre- and post-tests and a qualitative questionnaire to test the impact of web-based information literacy tutorials to undergraduate students.

The same test administered at the beginning and the end of a course monitored progression of student learning. Results identified gaps in competence and defects in skills and knowledge deficiencies. It gave an indication of what must be emphasised in the information literacy program to rectify it. As students often overestimate their information skills, the pre-test results identified shortcomings and motivated students to partake in the information literacy program (Hernon & Dugan, 2002: 106).

A post-test that is administered at the end of a course will replicate the pre-test to measure improvement of skills and knowledge over a period of time (Knight, 2002: 17 and O'Connor, Radcliff & Gedeon, 2002: 528). Results can be used to rectify possible shortcomings in the teaching program.

5.5.6 Worksheets

It can be expected of students to complete worksheet, logs or diaries during training sessions or while they are performing a certain task. The notes will indicate how students apply the skills they have learned (Hernon & Dugan, 2002: 94 and Knight, 2002: 17).

5.5.7 Performance assessment

Instead of simply answering questions, performance assessment requires students to perform a task which will be judged against established criteria. A form of performance assessment is an assignment or project that will require more than one type of activity (Gratch-Lindauer, 2003: 29 – 30 and Rockman, 2002: 192).

5.5.8 Think-aloud protocol

According to Hernon and Dugan (2002: 94) think-aloud protocol is an assessment method where students articulate their thought processes and opinions while they are directly interacting with library resources to accomplish a task. The protocol indicates how each part of the task was interpreted and accomplished. It has been employed to evaluating search-strategies and information seeking behaviour (Davis, 2004: 314).

5.5.9 Portfolios

Portfolio development is a student-centred learning-outcomes based method of assessment (Latrobe & Lester, 2000: 197). Portfolios are not files of course projects and assignments, but are used to document professional growth and achieved competence and learning experience. For the evaluation of information skills portfolios can be used effectively to demonstrate growth in the critical reflection on the search process, formulation of search strategies, search results and personal databases (Fourie & Van Niekerk, 1999: 333). Portfolio development is an ongoing process, provides self-reflective activity and can be used as alternative summative assessment (Andretta, 2005: 64).

5.5.10 Case-based or problem-based learning

Case-based or problem-based learning uses mini-cases based on real life or work place scenarios to assess students' ability to identify information needs and to initiate topics to solve the case. According to Carder, Willingham and Bibb (2001: 181) as well as Dunn (2002: 28 – 29) this type of learning will develop critical thinking and lifelong learning skills.

5.5.11 Reflective learning

According to Herring (1996: 154) and Kember et al. (2000: 385) learners and students bring a variety of experiences of learning to each new learning situation. Part of the learning process is the ability to reflect on past experience in the form of transferring skills or preventing repetition of previous mistakes or omissions. In the information literacy process students will reflect on what they already know, what sources might supply needed information, relevance or suitability of retrieved information and what they are going to communicate. It can be used effectively to demonstrate the extent to which students had absorbed and understood the research topic and applied theory to practice (McGuinness & Brien, (2007: 25 – 27).

Nutefall (2005: 89 & 96) reported on how students had to write essays reflecting on what they would do differently (Paper trail assignment). For librarians it gave insight into the research process followed by students.

5.5.12 Self-assessment

The final phase of the information literacy process is to appraise the completed task or to evaluate the final product to determine if any part is incomplete or needs improvement. Unsatisfactory products imply that not enough knowledge was gained, that information skills were insignificant and that no solution to an information problem was found (Behrens, Olën & Machet, 1999: 106 – 107.

The set of competencies identified by the information literacy standards for higher education can be used as a yardstick or benchmark by the students. They will know what is expected of them and how they measure up towards it. Such insight should prompt the student to repeat the process and seek help in where needed.

5.5.13 Post-campus assessment

Rockman (2002: 193) reported on determining how graduates retained and employed information literacy skills and how they met job requirements by sending surveys to graduates and employers. Results

supply useful information on usefulness and applicability of course contents, instructional strategies and campus learning environment.

5.6 Conclusion

Assessment is a well-established pedagogical tool. Information literacy assessment fits into outcomes-based assessment within higher education. Assessment of information literacy is more likely to succeed when it addresses specific information literacy outcomes. As universities build information literacy instruction programs that integrate library skills throughout the entire curriculum pre-assessment of information skills should become a natural part of the package.

Various assessment tools are in use to evaluate information literacy. Their main purposes are to test diagnostically, to supply formative and summative feedback and to assure quality. Information literacy assessment should demonstrate the correlation between information literacy skills, research skills and empowerment. The best way to judge competence might be to compare what students are doing when they are searching for information and the existing standards of information literacy. As it is both time consuming and costly, a combination of assessment tools should be used to determine different aspects of information literacy skills as well as whether and what students have learnt. An important aspect of assessment is also to measure how students apply their knowledge to real life tasks, in other words, can they transfer skills.

6. INFORMATION LITERACY COMPETENCIES AND PROFICIENCIES OF AN INCOMING UNDERGRADUATE STUDENT

6.1 Introduction

Most incoming undergraduate students do not possess adequate information skills to complete some of the required course work tertiary education requires. Due to the legacy of inadequate schooling, lack of exposure to school and public libraries and limited access to resources the majority of students entering the University of the Western Cape are deprived of even the basic library and information skills expected from them.

"Information literacy consists of an infusion of various different skills, many of which may be taken for granted by teachers and lecturers, but which students simply do not possess" (Sayed, 1998: 9).

This argument is also reflected by O'Hanlon (2002b: 63) when he warns college administrators that they must not assume that new students will arrive with acceptable computing and research skills. He also argues that the entry-level skills of students must be assessed and that appropriate instruction must be provided accordingly.

Various international studies underline these arguments as well:

Cameron and Feind (2001: 214) reported that in the year 2000 of the 2629 first year students who attempted to pass the James Madison University's online Information Seeking Skills Test (ISST), only 1966 passed. The exercises tested information seeking skills on two cognitive levels, namely knowledge and application, concentrating on reference sources, database searching, Internet searching and ethics. It was found that students, who failed, needed workshops on locating journal articles, using Boolean operators, keywords hence subject searching, formulation search statements and identifying types of citations.

A later study by Cameron (2004: 228) made it clear that learners do not acquire library skills at school. She reported that 28% of first year students were prevented from registering for second semester courses because they failed the information seeking skills test. The main reasons for failing were the inability to interpret terminology and bibliographic citations as well as general reading and comprehensive problems.

De Jager & Nassimbeni (2002: 179) found that 60% of South African tertiary students are not computer literate and 70% of them are not library literate. Some reasons might be the lack of school libraries and librarians (Hart, 1999: 78 and Maughan, 2001: 85), poor schooling system (Makhubela, 2000a: 2) and cultural, language and gender barriers (Makhubela, 2000a : 5). Deficiencies in language, reading, writing and study skills are underlying problems hampering students' ability to master information literacy skills (Machet & Behrens, 2000a: 9).

Walker (1999: on-line) established that most entering students at the University of Witwatersrand have never been exposed or made use of complex information resources found at universities. Although students may be basically computer literate, it is unlikely that they have an extensive understanding of the purpose and possibilities of a computerized library system, catalogues, call numbers, data bases and the Internet.

6.2 Information literacy training

Studies like Dunn (2002: 26) and Julien (2000: 521) proved that incoming students are not attending voluntarily library orientation. Cameron (2004: 213) reported that 30% of students did not receive instruction and that problem solving and critical thinking skills are absent. Waldman (2003: on-line) reported that only 30% of freshmen of the City University of New York learned about electronic resources from library workshops. De Jager and Nassimbeni (1998: 132) found that 57% of students at the University of Cape Town attended library orientation sessions. Research by Somi

and De Jager (2005: 265) indicated that more than half of the students at the University of Fort Hare missed the library orientation sessions offered by the library.

In a study done at the University of the Pacific, California, Knight (2002: 18) found that 17% of freshmen students in the second semester had attended library classes and although they had to submit academic assignments in the first semester, only 27% used the library frequently.

In a study conducted at the University of California-Berkeley, Maughan (2001: 72) found that one out of four undergraduate students will spend no time in the library. Taking the fact that 65% of undergraduates spent less than 4 hours per week in the library into consideration, it is clear that students do not understand and value the importance of using resources for further reading in the library. It is also an indication that lecturers don't encourage individual and resources based learning, that the library is not seen as an addition to the class room and that rote leaning is the order of the day.

A recent study on incoming first year undergraduate students at the McGill University in Quebec (Canada), indicated that students are not information literate. Questionnaires were used to assess information skills. Results showed that students' knowledge of the basic elements of the information seeking process is limited. The highest rate of correct answers provided was less than 36% (Mittermeyer, 2005: 203).

Greer, Weston and Alm (1991: 554 – 555) researched library literacy at the University of Northern Colorado and indicated that students rely primarily on other students for assistance in finding information in the library.

The reasons for students not realizing the need for library instruction might be that they are satisfied with using certain resources and that they are not aware of the wealth of information available in other resources (Brown,

Murphy & Nanny, 2003: 395). Another reason might be that they are anxious about using the library because they do not feel confident and competent (Jacobson & Mark, 2000: 276). Mariti (2006: 103) found that the information literacy of postgraduate students at the National University of Lesotho ranged from moderate to poor. Students graduated without acquiring the needed skills and competence.

An added reason might be that students in general think they know more about accessing information and conducting library research than they are able to demonstrate when put to the test (Maughan, 2001: 71).

In a study done by Edwards & Bruce (2006: 366) students indicated that their searching skills improved over time. They have learned to search faster and more accurately as well as how to retrieve higher quality information. The reasons for the improvement were that they learned to reflect upon their searching and that they had a team of teachers who assisted them. Coupe (1993: 195) came to the conclusion that students will not improve their library skills – especially keyword and periodical index or database searching on their own. The necessity for formal information literacy education is thus pertinent.

6.3 Computer skills, the Internet and web-based resources

Students with computer experience are more likely to use not only the Internet, but also the library's electronic resources (Waldman, 2003: on-line).

Most incoming students are more eager and willing to learn about web-based resources. They are more comfortable and adept in finding electronic information because they are under the misperception that abundant, appropriate information is a mere touch of a computer button away (Cmor & Lippold, 2001: on-line; Prozesky, 1996: 17 and Rawlins et al., 1999: 55). Students tend to use web-based resources because they are convenient, flexible and up-to-date (Rockman, 2002: 195), it speaks to

them in their own language (Forsyth & Legge, 2000: on-line and Sullivan, 2004: 72), it is more fun and easy to use (Merchant & Hepworth, 2002: 83) and a simple search will retrieve a large quantity of information (Morrison, 1997: 9 – 10 and Rockman, 2002: 195). Often though the quality of the information retrieved will be overlooked. Brown, Murphy and Nanny (2003: 387) and Cmor and Lippold (2001: on-line) warn that many students will think that because they have the technological skills to find information, they are automatically information literate.

Information technology can hinder the mastery of information literacy skills. Students in general overestimate their ability to effectively search for and access information. They expect to find lots of information quickly, easily and by using one word only (Balas, 2003: 31 and Seamans, 2002:116). Students consider searches successful if many results are found using popular search engines (Warnken, 2004: 152 – 153). Because using search engines is so quick, the trial and error way to find information instead of developing an effective search strategy is popular. Griffiths and Brophy (2002: on-line) reported that 45% of students at the Manchester Metropolitan University and the Lancaster University in the United Kingdom, used Google as the first and only retrieval tool to find information for any given information task. Most students will overlook the fact that library resources are more comprehensive and scholarly than the Internet (Waldman, 2003: on-line).

The ability to interpret the navigation pointers on the screen is an important skill when using the Internet. Students who are not good readers or who find the language usage too difficult will not find relevant and quality information (De Ruiter, 2002: 200 and Merchant & Hepworth, 2002: 84). If a student is not confident in using information technology he or she will not be able to search effectively (Edwards & Bruce, 2006: 366).

6.4 Information seeking behaviour

6.4.1 Keywords or search terms

Because students spend little time to define problems and to place questions into context, they will use only the words listed in a question or assignment topic as keywords (Mitchell & Viles, 2001: 309). A study by Morrison (1997: 10 -12) of undergraduate students at Concordia University College of Alberta reported that their inability to refine search topics frustrated them and that when they had to collect information, feelings of uncertainty and apprehension were experienced. Similar trends were reported by Arnold and Jayne (1998: 44), Forsyth and Legge (2000: on-line, Kunkel, Weaver and Cook (1996: 432) as well as Rockman (2002: 195). They concluded that undergraduate students do not understand the difference between keywords and controlled vocabulary, that they are not systematic searchers, that they do not know the value of narrowing searches and that they do not know the effect Boolean operators can have on a search. Jacobson and Mark (2000: 256) reported that students find prodigious volumes of information with relative ease, but they lack the critical thinking skills that will enable them to refine searches – especially database searches.

Atkins (2002: 25) and Fourie (2003: 122) found that because of cultural and linguistic diversity, new technologies and lack of prior learning experiences, South African students are not able to select search terms, understand Boolean logic, select appropriate sources and interpret bibliographic citations. Davis (2004: 306) as well as Ruth (1997: 171) indicated that because English is not the mother tongue of most students at the University of the Western Cape, they struggle to formulate search strategies and find concepts like journal articles, abstracts and indexes difficult to understand.

Caravello, Herschman and Mitchell (2001: 196) tested how knowledgeable undergraduate students at UCLA are about library resources. Only 30% of the students changed the search terms when they did not receive any

hits. The rest presumed that there is no information on what they are looking for. A similar trend was identified by James (2006: 527) when she concluded that the main issue is not for students to conduct a library information search, but to persist until they have the information needed.

6.4.2 Resources used

Both studies by Burton and Chadwick (2000: 321) and Gutierrez and Wang (2001: 208) found that students will use resources that are easy to find, available and easy to understand. If the information is cognitive and physically accessible it will be used, irrespective of it not being the best quality information, hundred percent relevant or worthy to use. Armstrong (2003: 54) reported a strong tendency to drop out due to frustration of not knowing how and where to find high-quality resources for research while East (2005: 138) found that students are not on top of new developments and electronic books for example are not a frequently used resource.

Carlson (2006: 14) evaluated the bibliographies of research papers by first year students and concluded that they rely primarily on books as resources. Not many journal articles were used.

With instruction, students can become familiar with resources. Cameron (2004: 213), Coupe (1993: 195) as well as King and Ory (1981: 35) found that students will initially use only resources that they are familiar with, but after formal instruction undergraduate students started using the traditionally “difficult” information resources like periodical indexes and governmental publications. In general students do not value the in-depth discussions found in books and journal articles (Rockman, 2002: 195).

Students in general have problems to find journal articles – both printed and electronically (Knight, 2002: 17; Mitchell & Viles, 2001: 314 and Patterson, 1978: 227). Kunkel, Weaver and Cook (1996: 432) found in a study of undergraduates at the Kent State University in Ohio, that after library instruction 92.7% of students were able to recognize indexes as the source to consult when looking for journal articles. Difficulties were

experienced in deciding what indexes to use for certain subjects, how to read the index entries and identifying the parts of the journal article citation.

Caravello, Herschman and Mitchell (2001: 198) as well as Coupe (1993: 192) found that students did not know that they must use journal articles when they are looking for information on current issues in a particular subject field.

6.4.3 Catalogue usage

In a study done at John Hopkins University, Coupe (1993: 188) discovered that less than 50% of students were able to identify call numbers, 84,6% thought they would find journal articles in the catalogue, less than 35% were able to distinguish between book and journal article citations and only 25% knew how to use Library of Congress subject headings. Students in general had problems to correctly identify references to books and to decipher locations of serial publications (Coupe, 1993: 80). Similar findings were recorded by Mitchell and Viles (2001: 311 – 315) at the Appalachian State University.

Cameron (2004: 213) indicated that practical skills are needed to strengthen instruction. It is no use putting students through a once off theoretical session and expecting them to be able to use the catalogue in future.

In a study on library skills Kunkel, Weaver and Cook (1996: 432) found that although 90,2% of students were able to identify the library catalogue as the retrieval tool to locate books, 30% thought that they can locate journal articles by using the catalogue. A smaller percentage of students (40%) were able to choose from a given list of subject headings, the appropriate heading that will result in the retrieval of relevant information.

Zondi (1992: 205) also reported that students used author and title access points regularly, but were unsuccessful in finding relevant information

using keywords or subject heading searches. In contrast to De Jager & Nassimbeni (1998: 131 – 144) who reported that 48% of students at the University of Cape Town used the catalogue frequently, Knight (2002: 18) indicated that 47% of students at the University of Pacific, California have never used the library catalogue and that 42% of the students never checked out a book.

In a study of library use at the University of Wiscounsin-Madison Whitmire (2001: 381) found that undergraduates in their first year will use the library catalogue more than any other library activity. Checking out books though was found to be low on the priority lists of activities.

6.5 Evaluation of retrieved information

Research by Arnold and Jayne (1998: 45), Prozesky (1996: 17) as well as Underwood and Karelse (1996: online) indicated that the lack of critical thinking skills render first year students incapable of evaluating information and discrimination between good and bad information. They will regard all information as having intrinsic value, will assume that all information found is the 'absolute truth' and accept it without any form of assessing its validity (Hearn, 2005: 219).

Burton and Chadwick (2000: 320) determined patterns in the use of the Internet and library sources. Their research indicated that 42.4% of students had no training in evaluating resources. Students will use the resources that they are familiar with. Of the students who used the Internet, 66% did not know how to evaluate retrieved information (Burton and Chadwick, 2000: 311). De Ruiter (2002: 201) underlines this trend by indicating that determining the reliability of Internet resources is much more difficult than printed resources and that students find it difficult to transfer evaluation criteria from one type of resource to another. Students will trust information found on the Internet and will often not verify the data by checking multiple references (Caravello, Herschman & Mitchell, 2001: 196 and Walker & Engel, 2003: 135).

Knight (2002: 18) reported that although freshmen students were able to use the online catalogue and to perform advanced searches, only a few managed to find reliable Internet sources. Most students were unable to make critical judgements about the sources they have selected. The ability to evaluate the quality of information or to "see through the clutter" is crucially important (Albrecht, 2001: 27) and students need professional guidance on how to critically select, determine bias, determine quality of resources, evaluate and use information to solve problems and do tasks (Ferguson, Neely & Sullivan, 2006: 61 – 71 and Makotoko, 1999: 81).

Many students think that when they get lots of information on a topic, the sources are all reliable – especially websites. They will not apply evaluation criteria and will therefore use old dated sources for current topics (Forsyth & Legge, 2000: on-line). In a recent study, Stieve and Schoen (2006: 599) found that students will select books in order of priority according to table of contents, organization, index, publication date, size of print, title, size of book and illustrations.

6.6 Assignment writing and citing behaviour

Entering students in general find it difficult to synthesise a logical argument using a variety of viewpoints from different authors, to reference and cite sources used, to compile a bibliography, to structure assignments and to express their own ideas (Cameron, 2004: 213; De Jager & Nassimbeni, 1998: 132; Fitzgerald, 2004: 20; Kaplowitz, 1986: 12 and Leibowitz, 1995: 40). Underlying is the inability to read critically.

Ferguson, Neely and Sullivan (2006: 61 – 71) found that a significant number of Biology students at the University of Maryland are not familiar with how to cite resources used correctly. According to Caravello, Herschman and Mitchell (2001: 201) 97% of undergraduate students at UCLA could identify websites, but only 40% could identify a journal article from other citations.

6.7 Plagiarism

Non-English students who lack information literacy skills and confidence and proficiency in the usage of the English language tend to be guilty of plagiarism. Because of confusion of how to cite (especially web-based resources) and what the text means, references will be left out or previously prepared full-text papers will be down loaded (Arnold & Jayne, 1998: 46 – 47 and Leibowitz, 1995: 42).

To prevent plagiarism, it must be defined, explained and discussed. When research projects are set, resources of what constitutes plagiarism in different disciplines must be provided (Lampert, 2004: 354).

6.8 English as second language

It was mentioned already that the overwhelming majority of incoming students at tertiary institutions are nonusers of English. This new international phenomenon is influencing information literacy training and the language barrier will impact negatively on library services rendered (Jackson, 2005: 200). According to Rockman (2004c: 51) non-English speakers lack the ability to read critically and comprehend what they read. Both Castro (2002: 31) and Conteh-Morgan (2001: 32) reported that literacy training for non-English speakers requires lots of hands-on practice, illustrations and graphics to augment text, step-by-step procedures and the avoidance of library jargon and technical terminology. To ensure low-anxiety levels in students, a low teacher-student ratio is needed and concepts must be explained and simplified. Makhubela (2000a: 5 – 6) added that the diversity and prior learning of non-English students should be acknowledged.

Makotoko (1999: 65) found that 35% of students with English not as their mother tongue at the University of Cape Town are able to express other writers' ideas. They also found it difficult to retrieve useful and relevant information for assignment writing or to solve a problem.

6.9 Conclusion

From the literature reviewed it can be concluded that the competence and proficiencies of most incoming undergraduate students are not adequate. Students do not attend voluntarily library instruction programs and will rely on other students to find information. Students prefer cognitive and physically accessible resources as well as web based resources to library based resources but will not evaluate retrieved information. Many students are unable to select search terms and use Boolean logic to find relevant information effectively.

Students struggle to find journal articles. They also struggle to read academic texts critically, to synthesise from different texts and are often guilty of plagiarism. Although most students are able to use a library catalogue, finding the information in the library is problematic.

Underlying perhaps to all the above mentioned lack of competencies is the fact that the majority of incoming students at tertiary institutions are nonusers of the English language. As the majority of information, the language used by retrieval tools and teaching is in English, students find it difficult to find their way in the information world and to express themselves.

Because only a few students will habitually seek information, read actively, study, enjoy learning, enjoy manipulating ideas and feel comfortable and competent in analysing things, the need for compulsory credit-bearing information literacy courses to teach and guide students is expressed.

7. INFORMATION LITERACY TRAINING IN SOUTH AFRICAN HIGHER EDUCATION INSTITUTIONS

7.1 Introduction

Researchers like De Jager and Sayed (1998: 197), De Jager and Nassimbeni (2002: 180), Machet and Behrens (2000a: 8), Makhubela and Koen (1995: 15), Makotoko (1999: 81) and Prozesky (1999: 56) reported that because of enormous varying secondary school experiences and competencies, many South African students enter higher education without even the lower order information skills. The apartheid era resulted in an uneven delivery of resources and education in South Africa (Darch & Underwood, 1999: 290). This caused limited assess to quality of education and restricted access to information for the majority of South African students.

The majority of South African universities' undergraduate students come from historically disadvantaged black schools. They have little or no exposure to books, let alone libraries of any kind (Thompson, 1999: 36) and because most of them are economically deprived, little money is available to purchase their own books. No culture of reading and use of information have been established. This resulted in weak reading and writing skills, study methods and technical handling of academic assignments (Van der Walt, 1992: 40).

7.2 Policy issues concerning information literacy in South Africa

Curriculum 2005, the new national curriculum for South African schools, made information skills a compulsory subject. Information literacy skills are incorporated in the new outcomes-based, learner-centred and resources-based curriculum (South Africa. Department of Education, 1997a: 1 and Zinn, 2000: 40) and the importance of information skills and education libraries and services were acknowledged (Naidoo, 1997: 3). The new approach is designed to create citizens who are thinking,

questioning, problem-solving individuals who will survive in the information society.

For the new curriculum to be successful, access to a resource rich learning environment is necessary. Most schools in South Africa however lack basic learning resources. They are deprived of school libraries and computer laboratories and widespread cutbacks on staff impacted negatively on existing teacher-librarian positions. Only 30% of South African schools have libraries and less than 13.5% can supply access to computers for their learners (Hart, 2000: 71 and South Africa. Department of Education, 1997b: 1). Learners have no option but to rote learn from teachers' notes and from textbooks.

Because of virtually no functioning and under staffed libraries in disadvantaged schools in South Africa learners must rely on public librarians to take on the task of information literacy education (Hart, 2004: 110) or on project work offered by barely information literate teachers (Hart, 1999: 95).

In 1996 the working group on Library and Information Technology (National Commission on Higher Education, 1996: 48) indicated that information literacy is required for lifelong learning and that information literacy programs for students are necessary. The South African Qualifications Authority Act (South African Qualifications Authority. 1995: on-line) stipulated that for each qualification a critical outcome should be that students are able to collect, analyse, organise and critically evaluate information. This was strengthened when the Council on Higher Education required information competencies in all levels of qualifications granted by tertiary institutions (South Africa. Council on Higher Education, 2001: 109).

The Coalition of South African Library Consortia with 17 participating academic libraries regards information literacy education as a priority (De Jager & Nassimbeni, 2002: 172).

Although no information literacy standards specifically for South African higher education have been developed, a start was made when the School Libraries and Youth Services Interest group of the Library and Information Association of South Africa (LIASA) published information literacy guidelines for grade R to 12 (Library and Information Association of South Africa, 2004).

7.3 Information literacy initiatives in South Africa

According to De Jager and Nassimbeni (2002: 173) there was an increase in published material on information literacy interventions since 1993 in South Africa. Mainly because of the INFOLIT Project (De Jager & Sayed, 1998: 197; Makhubela, 2000b: 141; Sayed, 1998: 5 and Underwood, 2002: on-line) the importance of information literacy education was realized and several projects were undertaken.

De Jager and Nassimbeni (1998: 131 and 2003: 108 - 114) researched information literacy initiatives in South African higher education institutions and concluded that mostly credit-bearing courses are offered to undergraduate students.

According to Walker (2001: 64) the University of the Witwatersrand library is still struggling to get a campus-wide commitment to information literacy. There is also still a strong tendency to equate information literacy with technical skills associated with information communication technology.

In a survey to assess the extent of institutional support for information literacy in South African tertiary education institutions (De Jager & Nassembeni, 2002: 176 – 179 and 2005: 31 – 36) the following trends were found:

- Little evidence of institutions regarding information literacy as important

- Most academic libraries have separate mission statements than those of the institution
- Some evidence of cooperation between libraries and academic departments
- Information literacy courses offered at institutions with Departments of Information Science / studies
- Stand alone and generic courses exist
- Attempts at integrating courses into disciplines / curricula
- Most courses are aimed at first year students
- Increasing need for assessment of information literacy
- Not all courses are credit bearing
- Course delivery varies
- Not all the required competencies are covered by courses

The challenge to meet information literacy standards and outcomes and to implement an information literacy course that is part of the core curriculum for incoming students in higher education institutions in South Africa is affected by several problems. The lack of support from academics and administrators and lack of keyboard skills by students are examples thereof (Erasmus, 2001: 21 and Rawlins et al., 1999: 55).

7.4 Information literacy training at the University of the Western Cape (UWC)

As mentioned already, the majority of incoming undergraduate Arts students at the UWC come from South African historically disadvantaged black schools. As a result of enormous varying secondary school experiences and competencies as well as a lack of exposure to school and public libraries learners are deprived of the basic information skills. Students without these crucial skills will find it difficult to cope successfully with their academic courses or eventually measure up to the demands of employers. The information environment is too complex and changing too rapidly to expect students to acquire information literacy without a planned, cumulative instructional program.

De Jager and Sayed (1998: 200, 203) reported that UWC students expressed a serious need for developing searching skills, discovering resources, help with writing and referencing skills and guidance in finding information in the library. Research by Ruth (1997: 174) indicated that library education programmes need to extend beyond the library itself and that a holistic effort is necessary.

Part of the mission statement of UWC indicates that the university commits itself to enhance information competencies, utilizing existing information technologies, to enhance academic programs and teaching through the use of library resources and computing facilities (University of the Western Cape, 2007: on-line).

Although all tertiary education should ensure that all students achieve an acceptable level of information literacy by the time they graduate, currently only one professional credited course on information literacy is offered at UWC. It is offered by the Department of Library and information Science to Arts undergraduate students. Since 2005, various other courses as part of the Foundation courses include aspects of information, library and academic writing skills.

As part of the orientation week, incoming students visit the library and are introduced to the library and the services offered by the library. As follow up initiatives the subject librarians are offering user education programmes to students in their respective faculties. These programs consist of the learning of basic search skills, the use of the library's electronic resources and finding information in the UWC library. Although it runs throughout the year, not all the students are attending the sessions. This is because it is not compulsory or credit bearing and not all lecturers value information literacy. Time consuming individual assistance is given to students by individual librarians as the need arises. Repetition and duplication is therefore currently the order of the day. A need for a generic compulsory course has been expressed often. Such a course where basic skills are mastered will ensure that all students are on an even level of competency

and enable librarians to render an effective subject based information service.

Some lecturers will embed information literacy training in their academic courses. Lecturers will set assignments where students must write academic essays on given topics. For these assignments it is expected from students to find relevant information, use correct reference techniques, prevent plagiarism and to synthesise new information into their knowledge base.

7.5 UWC Arts information literacy: Library Science 121

7.5.1 Introduction

From assignments set as part of the assessment of Library Science 111 and 121 it has become clear that incoming Arts students lack vital information literacy as well as computer literacy skills. At faculty meetings, lecturers in other disciplines expressed the same concern. Although efforts have been made to integrate information literacy components into the curriculum, discipline courses contain too much subject contents in order to allocate sufficient time to information literacy education. Opportunities in the past to lobby for a compulsory credit bearing generic information literacy course and to seek high level commitment and support from faculty and academic development did not have the expected results. The main reason being that no place for such a course could be found in the structure of programs.

The following facts motivated the Department of Library and Information Science to adapt and develop the existing credit-bearing stand alone Library Science 121 course into an information literacy course that all students in the Arts faculty will benefit from:

- students will not realize the importance of research skills until they need it for a particular course or assignment,

- students do not acquire efficient information literacy skills during normal academic courses,
- students do not go voluntarily for training sessions offered by the academic library at the UWC,
- students do not devote time to activities which do not count towards their official assessment.

No international prescribed information literacy training program model exists. Various courses with varying practices are found at higher education institutions - ranging from more generic skills training offered by the academic librarians to integrated courses where information literacy training is part of an academic course and teaching is shared by an information literacy instructor and academics.

As computer literacy or at least keyboard skills are a prerequisite for effective information literacy education, the new course required a component of computer literacy training. It was necessary to develop a course that will measure up to international standards and satisfy the specific needs to UWC students.

7.5.2 Development of Library Science 121

The Library Science 121 *Arts Information literacy* was seen as an initiative for collaboration between librarians and academics. Genevieve Hart, a lecturer of the Department of Library and Information Science together with librarians of the UWC library and the Tentana Learning Unit (responsible for computer or as it is more recently known digital academic literacy) initially developed the course. Other academics and academic librarians from the Arts faculty were invited to contribute towards the curriculum, to supply topics for assignments, to assist with the assessment of assignments and to encourage students to register for the course.

Principles taken into account when the course content was developed were:

- Information literacy standards, competency indicators and outcomes for higher education of the ALA, Council of Australian University librarians and IFLA
- Guidelines for best practices and assessment of information literacy programs
- Objectives for information literacy
- Specific learning objectives for every information literacy standard and indicators used to demonstrate that students have achieved the outcome
- The active learning information literacy spiral as process
- Models of existing information literacy courses
- Small group teaching
- Class and group discussions in small groups
- Collaboration between academic librarians and academics
- Resources based teaching
- Academics as tutors
- Practical hands on exercises
- Real life scenarios to promote problem solving and critical thinking skills
- An academic essay as a cap stone task to demonstrate all mastered skills

After the draft course was developed, round table discussions involving all the other role players like the other lecturers of the Department of Library and Information Science and tutors were held. After some minor changes were made to the curriculum, the course was started in 2002 as a credit bearing semester course open to all Arts students.

7.5.3. Design and method of instruction

For the Library Science 121 *Arts Information literacy* course, students must attend on a weekly basis a theoretical lecture, a digital academic

literacy tutorial and an information literacy tutorial. Both the lecture and the two tutorials are one hour long. The course is offered as a semester course over fourteen weeks.

All the students would attend the theoretical lecture as a large group and a normal lecturing hall is used as venue. For both the tutorials students are divided into smaller groups. For the digital academic literacy, the tutorial groups accommodate a maximum of forty students at a time and are offered in computer laboratories. Students regarding themselves as computer literate are allowed to sit for an exemption test. If the test is passed, students are exempted from the digital academic literacy tutorials.

As small group teaching is essential for effective communication between lecturer and student, for small group as well as class discussions, the information literacy tutorial groups accommodate not more than twenty students. Class discussions and hand-in exercises set opportunities to engage in critical thinking and problem solving situations. As practical skills to strengthen instruction are needed, not only theory is taught, but individual hands-on experience is given. Tutorials are offered by lecturers from the Department of Library and Information Science as well as one or two librarians from the academic library (Samson & Millet, 2003: 84 and Stec, 2006: 112). As a joint teaching initiative a lecturer from the Centre for Information Literacy at the University of Cape Town, joined the tutors and was responsible for offering two tutorials each week. Due to him leaving the university, the joint venue lasted only two semesters.

The information literacy tutorials are offered in a seminar room in the library equipped with a white board and a computer and data projector for easy access to new information technology. Being in the library gives students easy access to resources and it strengthens collaboration between the Department of Library and Information Science and the library as resources and facilities are shared.

Tutorials which require each student to have access to a computer (for example the online catalogue tutorial) are offered in the library's training room equipped with forty computers. Being in the library will prevent students from thinking that by accessing the library's resources and retrieval tools electronically, that they are bypassing the library and that the library is not needed.

To enable students who missed a tutorial or who felt that they did not understand the contents of the tutorial the first time or did not master the required skills, a catch up tutorial is offered at the end of the week.

The Library Science course is a combination of five models of information literacy training. Elements of the introduction model are implemented when the students are guided through the UWC library. The course is basically generic but incorporates principles of the integrated curriculum by using assignment topics from different Arts disciplines. Some skills taught using web-based (e.g. search engines as retrieval tool) and on-line tutorials (e.g. OPAC) are offered in the computer laboratories. As each tutorial begins with the outcomes for the tutorial, the learning outcomes model is implemented. Since students must master and demonstrate during the tutorials as well as during completion of the exercises and assignment their acquired skills, the demonstration of mastery model is also incorporated.

The contents of the information literacy sessions are divided into twelve themes. The theoretical part of the theme is discussed in the theory lecture. The tutorials are used to revise and re-enforce the theory and for practical hands-on work. After each tutorial, students must submit an exercise based on the work done in the tutorial. The marks of the exercises are used to compile a continuous mark for the course. Marked exercises are handed back to students at the next tutorial to ensure feedback on skills mastered and to emphasis significance and proficiency.

A printed workbook which includes the theoretical information, the tutorials as well as the exercises, is used to assist teaching and instruction. It serves as a reference aid and can be used not only for the course, but also to apply the skills when research assignments are required in other disciplines. Because many students have general reading and comprehension problems, the workbook gives students the opportunity to read and revise at their own pace. Specific outcomes for each information literacy tutorial are decided on and listed in the course workbook. Criteria and rubrics for exercises and the assignment is also included to enable students to familiarize themselves with the outcomes and use it for self assessment.

Students are informed at the onset of the course that an academic essay is to be submitted towards the end of the semester that will form part of their assessment. Students are allowed to choose from a large array of given topics. The diverse backgrounds of students, especially their English proficiency, as well as the available resources in the library were considered when assignment topics were set. Topics that should be of interest to them or by gaining knowledge about the subject will benefit them in the other courses they are doing were chosen.

Most weekly exercises are based on the student's individual assignment topics. After the database tutorial for example, students must find journal articles that they can use as resources for the assignment. It will ensure that students interact with the topic during the whole duration of the course and will encourage individual critical thinking and problem-solving situations. As mentioned already, the prescribed format and other assessment criteria for the assignment are listed in the workbook (Larkin & Pines, 2005: 40 – 45).

In doing the assignment, students should get a holistic picture of the information literacy process and should be able to apply the process when other research assignments are required. Uniform reference techniques (Abridged Harvard method) are taught to prevent plagiarism.

7.5.4 Assessment

Students are assessed by the weekly information literacy exercises (assessment weight 20%) that they submit, marks earned for computer literacy exercises and tests (assessment weight 20%), an academic essay as their assignment (assessment weight 30%) and a written examination (assessment weight 30%). Various formats of the weekly exercises ensure multiple approaches to assessing skills.

Feedback is given to students to emphasise significance and proficiency.

7.5. 5 Contents

The course is a generic course in the sense that it is not integrated within a subject or professional area. To compensate for that, students can choose a topic to do their research assignments from a wide spectrum covering most of the Arts disciplines and course-integrated information literacy instruction is given. Students are therefore equipped with knowledge about the subject and research practices of particular disciplines as well as the broader, process-based principles of research and information retrieval that apply generally across disciplines.

As the most effective learning about library and information use is tied to a specific information need, scenarios and exercises are linked to students' academic life. Specific skills are taught and assessed.

Although responsibility for the teaching of the information and digital academic literacy parts are different departments, the weekly themes are scheduled to complement each other and to reinforce learning outcomes and skills.

The contents of the digital academic literacy sessions are: Overview & sign up, getting started, about your PC and editing, introduction to e mail, introduction to Internet, spreadsheets and presentations. As continuous theme for exercises HIV/Aids are used.

The contents of the twelve information literacy themes, tutorials and exercises are:

Theme 1 Information, information society & information skills
Tutorial 1 Information skills model
Exercise 1 Applying Big6 information skills

Theme 2 Defining information need & mind mapping
Tutorial 2 Keywords & mind mapping
Exercise 2 Dictionaries, keywords & mind maps

Theme 3 Information sources
Tutorial 3 Finding & evaluating information
Exercise 3 Google search & encyclopaedias

Theme 4 Generic search strategies
Tutorial 4 Finding information within sources
Exercise 4 Venn diagrams & search statements

Theme 5 Locate & access information: reference material
Tutorial 5 Reference material available electronically
Exercise 5 Find answers in reference material

Theme 6 Locate and access information: Books
Tutorial 6 Using the OPAC to find books
Exercise 6 Catalogue exercise & books for assignment

Theme 7 Locate & access information: Journals
Tutorial 7 Using databases to find journal articles
Exercise 7 Using databases to find journal articles

Theme 8 Using information: engage & extract information
Tutorial 8 Reading skills & taking notes
Exercise 8 Summarizing

Theme 9 Synthesising information & citing sources

Tutorial 9 Synthesising information from various sources & citing sources

Exercise 9 Writing the Introduction of assignments

Theme 10 Compiling a bibliography

Tutorial 10 Compiling a bibliography

Exercise 10 Creating a bibliography for assignment

Theme 11 Presenting information: Academic essay

Tutorial 11 Parts of an academic essay

Exercise 11 Academic essay as assignment

Theme 12 Assessing the process & product

Tutorial 12 Feedback: exercises & assignments

Exercise 12 What will I do differently next time?

7.6 Conclusion

The majority of South African undergraduates arrive at higher education institutions without the necessary information literacy skills. This lack of skills is a major contributing factor to the high failure or drop out rate of first year students. To compensate, various information literacy courses with different contents are offered at South African higher education institutions.

Since 2006 academic and information literacy components are offered as part of foundation year courses offered by faculties at the University of the Western Cape. The Library and Information Science Department in collaboration with the academic library and the training unit responsible for digital academic (computer) literacy offer the only stand alone, accredited course covering the whole information literacy process set in a theoretical framework.

8. METHODOLOGY

8.1 Introduction

A need for assessing the information literacy competence of all incoming Arts students at the UWC was emphasised in the previous chapters. Such a test will identify the baseline competencies of students, the need for information literacy initiatives and courses and identify gaps in competence that can be rectified to allow academics to work with the assumption that students have uniform basic information literacy levels.

To determine the impact that the Library Science 121 course had, a post-test was administered at the end of a course to measure improvement of information literacy skills. Assessing prior skills and knowledge will enable the researcher to quantitatively determine skills and/or knowledge gained during the course. Results can also be used to rectify possible shortcomings in the teaching program.

The study also aimed to determine the impact that Library Science 121, as an information literacy course, has on students' information literacy. It determined whether the course resulted in a higher level of information literacy or whether students are able to acquire the needed skills without formal training. It will also determine whether being information literate will result in higher academic performance.

Although various similar studies have been done internationally, the need for information specific to the UWC students motivated the study.

8.2 Questionnaires

8.2.1 Format and administration of the questionnaires

After a thorough review of the literature on similar assessment tools, it was decided to use questionnaires for the assessment of information literacy. Reasons for using questionnaires are to assess large numbers of

respondents, to assess a wide spectrum of information literacy aspects and to develop a tool that will suit UWC students. As most incoming Arts students at the UWC are not computer literature, it was decided to design a pen and paper questionnaire to assess the information literacy level of incoming Arts students. The first part of the questionnaire gathered demographic information and assessed the exposure to information literacy training, computer literacy experience and public library usage prior to university education. Twenty six questions were used to profile the incoming Arts students.

The second part determined the baseline information literacy competence and also served as a pre-test for students who will be doing the Library Science 121 *Arts information literacy* course. Thirty three questions that covered most aspects of the information literacy process were used to test information literacy competence. The second part was again completed by students after completing the Library Science 121 course and will be used as a post-test.

The same questionnaire was completed by a group of Arts students not registered for the Library Science 121 course. By comparing the information literacy scores of this control group with Arts students who underwent the information literacy training, the impact of formal training compared to initiatives within disciplines will be determined. Data was gathered over a period of three years. Results were used to identify gaps in the information skills of students and whether the Library Science 121 course should adapt to address these deficiencies.

Thirty minutes of lecture time was used each time to allow both the students in the Library Science 121 course and in the control groups to complete the questionnaire. This resulted in a 100% return of questionnaires distributed. Absenteeism during the last week of classes when the post-test was conducted resulted that not the same students completed both the pre- and the post-tests. As a result a t-test could not be performed and information literacy scores had to be compared.

8.2.2 Respondents

Only incoming Arts students were selected to be part of the survey. Both the pre- and post-questionnaires were completed by Arts students enrolled for the Library Science 121 course during 2003, 2004 and 2005. As control groups incoming students enrolled for any other first year Arts module were chosen to complete the control test. The numbers of respondents are given in chapter nine.

8.2.3 Questionnaire design

In order to construct a profile of the incoming Arts student at the UWC, the first section of the questionnaire was dedicated to gather demographic information and to determine the extent of students' exposure and use of computers, school libraries and public libraries as well as their reading habits prior to arriving at UWC.

To determine baseline information literacy of incoming Arts students, several existing questionnaires assessing information literacy competence, were studied and a set of unique questions developed. Although the second section was divided into five sub sections, namely general library and information skills, library catalogue skills, usage of indexes and serials, keyword usage and Internet and WWW usage, questions within the section tested most aspects of the information literacy process and outcomes.

Of the thirty three questions asked, four were open ended questions and the rest multiple choice. As students faired weaker in answering the open ended questions, results were interpreted bearing in mind that multiple choice questions gave students the opportunity to guess the correct answer. The result was a lengthy questionnaire with the potential of a broad range of quantitative data. The questionnaire with questions in numerical order and not as it appeared as the A5 format is listed in Appendix D.

8.2.4 Pilot study

After the completion of the questionnaire in A4 format, the Information Science 312 students were asked as pilot study to complete it. The questions were printed on both sides of the paper. Three students did not see the questions on the verso of the pages. To prevent it, the format of the questionnaire was changed to A5. The booklet handled better and no questions were left uncompleted unintentionally.

8.2.5 Method of data capturing

The first twenty minutes of lecture time at the beginning (pre-test) and the end (post-test) of the course was used for students to complete the questionnaire. Responses were captured using Microsoft Excel spreadsheets. Three different databases were created: pre, post and control. Statistical analysis of responses as well as tables and graphs were done using the Microsoft Excel program.

In order to determine an information literacy score, a point system of three for a correct answer and zero for an incorrect answer were used. As thirty five questions were asked, but forty correct options could have been chosen (all five of the options of question 7.11 were correct and question 11.3 had three correct options) a student who answered all the questions correctly, will receive a full score of 120 points. Information literacy scores were compared to determine if the scores improved significantly between the pre- and the post-test (Kaplowitz, 1986: 14 – 15; Knight, 2002: 19; Lawson, 1999: 76 and Whitmire, 2001: 384).

8.3 Conclusion

The questions asked in the questionnaire connected to the learning outcomes of information literacy. It tested both lower and higher order of skills, incorporating questions that required respondents to demonstrate their critical thinking, problem-solving and applications skills. Competence not opinion was tested in most of the questions.

9. FINDINGS: PROFILE OF INCOMING UWC ARTS STUDENTS

9.1 Introduction

Although Library Science 121 is a first year course, many students who are in their second or third year of studying will do the course to fill up their credits. To compile a profile of the incoming Arts student at the University of the Western Cape, only the data of students in their first year of study was used. The students doing the Library Science 121 course completed both the pre- and post-questionnaires. Only data from the pre- and the control questionnaires were used for the profiling.

The first part of the questionnaire with the following sections was used for the profiling: personal information, computer access prior to registering at UWC, school library access, public library usage and reading habits. In total twenty six questions were used.

Table 2 - Respondents

Year	Pre	Control	Total
2003	136	117	253
% total respondents	28.2%	24.2%	52.4%
2004	76	44	120
% total respondents	15.7%	9.1%	24.9%
2005	90	20	110
% total respondents	18.6	4.1%	22.8%
Total	302	181	483
% total respondents	62.5%	37.5%	100%

Table 2 above indicates that of the total respondents of 483, 302 were first year students doing the Library Science 121 course and 181 were first year students not doing the Library Science 121 course.

9. 2 Personal information

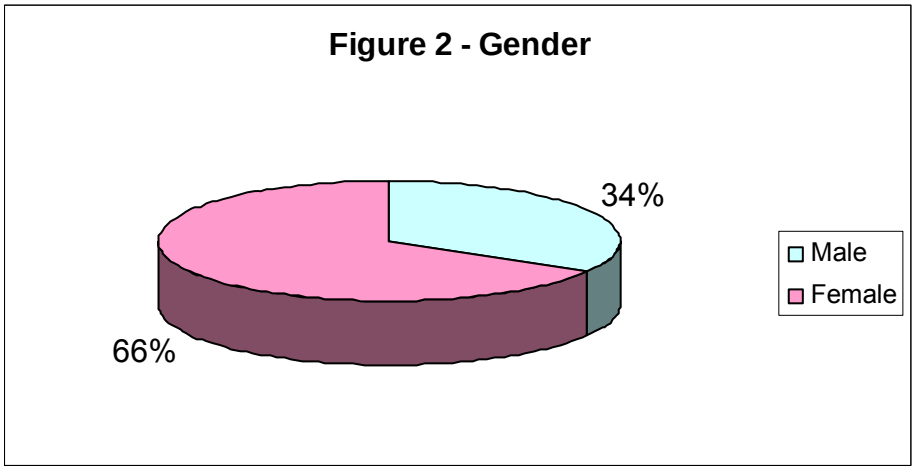
To obtain personal information about the incoming first year Arts student, students were asked to indicate their gender (male or female), their age, their home language and the region where they are from.

9.2.1 Gender

Students were asked to indicate on the questionnaire if they are male or female. Of the 483 students in the pre- and control groups, only 410 indicated their gender. Reluctance to reveal gender might originate from the need for gender equity or feminism.

Table 3 – Gender

			Pre 266	Control 144	Total 410
Male	2003	Number	38	35	73
		%	14.3%	24.4%	17.8%
	2004	Number	19	11	30
		%	7.1%	7.6%	7.3%
	2005	Number	28	7	35
		%	10.5%	4.9%	8.5%
	All years	Total	85	53	138
		%	32.0%	36.8%	33.7%
Female	2003	Number	81	60	141
		%	30.5%	41.7%	34.4%
	2004	Number	49	20	69
		%	18.4%	13.9%	16.8%
	2005	Number	51	11	62
		%	19.2%	7.6%	15.1%
	All years	Total	181	91	272
		%	68.1%	63.2%	66.3%



Significantly more female students were enrolled for the Library Science 121 course as well as for the different courses that were used as the control groups. Respectively 68.1% and 63.2% of the students in the pre- and control groups were females compared to the 32.0% and 36.8% of the male students in the corresponding groups. Of the total respondents more than two thirds (66.3%) of the students were female.

This trend corresponds with the fact that more females form part of the general intake of students in the Arts faculty.

9.2.2 Age

Students were asked to indicate on the questionnaire what their age is. As the age of students that advanced into their second and third years of study already will not reflect the age of incoming students, only the ages of students that were enrolled in the first year of their study were taken into account. Of the 483 students in the pre- and control groups, only 396 were enrolled for the first time.

Table 4 – Age

		Group		
Year	Data	Pre 257	Control 139	Total 396
2003	Count of age	114	92	206
	Average of age	21.254	19.772	20.592
	Standard deviation of age	4.25	3.13	3.86
	Minimum of age	17	17	17
	Maximum of age	48	40	48
2004	Count of age	66	29	95
	Average of age	21.2	19.8	20.8
	Standard deviation of age	4.27	2.92	3.95
	Minimum of age	18	18	18
	Maximum of age	36	34	36
2005	Count of age	77	18	95
	Average of age	21.7	20.2	21.4
	Standard deviation of age	4.17	4.94	4.34
	Minimum of age	17	18	17
	Maximum of age	35	39	39
Total count of age		257	139	396
Total average of age		21.4	19.8	20.8
Total standard deviation of age		4.22	3.35	4.00
Total minimum of age		17	17	17
Total maximum of age		48	40	48

The age range of students in the pre-group was prominently wider than that of the control group. For both groups the youngest age recorded was 17 years. The oldest age recorded for the pre-group was 48 years compared to 40 years for the control group. Although the average age of the first year students of the survey was 20 years and 8 months, it is noteworthy that 22 students (5.6%) were between 30 and 48 years of age. An explanation might be that students work after completing their schooling to earn money for studying, part-time students take longer to complete a degree as they attend classes only after five o'clock or because of the Recognition of Prior Learning system where mostly older students gain access to the university because of their working experience.

9.2.3 Age and gender

To obtain a clearer profile of the incoming Arts student, it was decided to investigate the relationship between age and gender of all the students that were in their first year of study. Results are shown in table 5 and 6:

Table 5 - Female age

Year	Data	Group		
		Pre 146	Control 116	Total 262
2003	Count of age	78	58	136
	Average of age	21.0	19.6	20.426
	Standard deviation of age	4.67	3.51	4.26
	Minimum of age	17	18	17
	Maximum of age	48	40	48
2004	Count of age	19	47	66
	Average of age	21.0	19.8	20.7
	Standard deviation of age	4.29	3.60	4.11
	Minimum of age	18	18	18
	Maximum of age	36	34	36
2005	Count of age	49	11	60
	Average of age	22.0	20.4	21.7
	Standard deviation of age	4.39	6.22	4.76
	Minimum of age	17	18	17
	Maximum of age	35	39	39
Total count of age		174	88	262
Total average of age		21.3	19.7	20.8
Total standard deviation of age		4.49	3.91	4.36
Total minimum of age		17	18	17
Total maximum of age		48	40	48

From table 5 above, it can be deduced that the age of the average incoming female Arts student will range from 17 to 48 years old, but that the average age will be 20 years and 8 months.

From table 6 below, it can be deduced that the age of the average incoming male Arts student will range from 17 to 35 years old, but that his average age will be 20 years and 9 months.

It seems as if the older incoming students were all female. As it was only a few students, the difference in the average age of the female and male students was one month only.

Table 6 - Male age

		Group		
Year	Data	Pre 83	Control 51	Total 134
2003	Count of age	36	34	70
	Average of age	21.7	20.1	20.9
	Standard deviation of age	3.19	2.36	2.92
	Minimum of age	17	17	17
	Maximum of age	32	27	32
2004	Count of age	19	10	29
	Average of age	21.5	19.7	20.9
	Standard deviation of age	4.31	0.82	3.60
	Minimum of age	18	18	18
	Maximum of age	35	21	35
2005	Count of age	28	7	35
	Average of age	21.0	20.0	20.8
	Standard deviation of age	3.74	2.16	3.47
	Minimum of age	18	18	18
	Maximum of age	33	23	33
Total count of age		83	51	134
Total average of age		21.4	20.0	20.9
Total standard deviation of age		3.62	2.09	3.20
Total minimum of age		17	17	17
Total maximum of age		35	27	35

9.2.4 Home language

The home languages that were recorded are listed in table 7 below. From the table it is clear that the home language of the majority (47.3%) of students was Xhosa. The languages English (16.9%) and Afrikaans (14.8%) are the second and third most often spoken home languages. Tswana (5.1%), Zulu (3.7%) and Sesotho (2.5%) are the mother tongue of

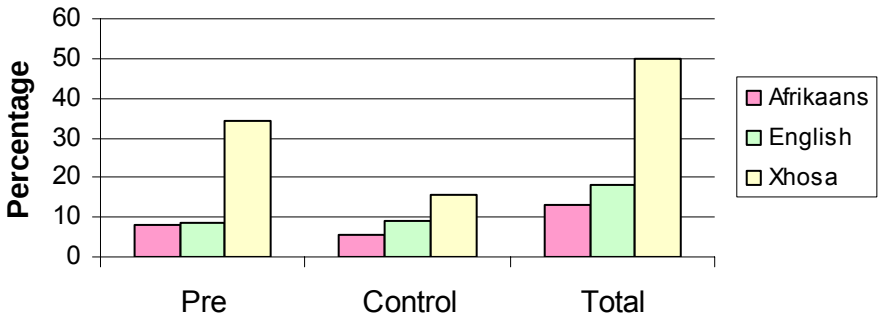
minor groups of students, while the rest of the list of home languages is not spoken by substantial parts of the first year Arts students.

Table 7 – Language									
	Groups								
	Pre				Control				All
Language	2003	2004	2005	Total	2003	2004	2005	Total	Total
Afrikaans	15	9	14	38	17	6	3	26	64
Asante	0	0	0	0	1	1	0	2	2
Chinese	1	3	3	7	0	0	0	0	7
Dutch	0	0	0	0	1	0	0	1	1
English	13	15	14	42	30	7	8	45	87
French	0	1	0	1	0	0	0	0	1
Khalanga	1	0	0	1	0	0	0	0	1
Khoekhogowa	1	0	0	1	0	0	0	0	1
Kinuaru	1	0	0	1	0	0	0	0	1
Kirundi	1	0	0	1	0	0	0	0	1
Korean	1	0	0	1	0	0	0	0	1
Pedi	0	1	0	1	0	0	0	0	1
Portuguese	2	0	0	2	0	0	0	0	2
Sepedi	0	0	1	1	0	0	0	0	1
Sesotho	3	4	3	10	1	0	0	1	11
Setswana	0	0	0	0	1	0	1	2	2
Shona	0	0	0	0	1	0	1	2	2
Siswati	1	0	0	1	1	0	0	1	2
Somali	0	0	1	1	0	0	0	0	1
Swahili	0	1	0	1	0	0	1	1	2
Swazi	4	0	0	4	0	1	0	1	5
Tsongo	5	0	0	5	1	1	0	2	7
Tswana	11	4	2	17	3	2	0	5	22
Venda	0	0	0	0	1	0	0	1	1
Xhosa	71	41	53	165	43	21	12	76	241
Zulu	4	3	6	13	3	0	0	3	16
	136	82	96	314	104	39	26	169	483

This trend corresponds with the fact that the mother tongue of most students enrolling for programs in the Arts faculty, is not English. They are advised to enrol during the first semester for the English Intensive course. It is a course that concentrates on improving students' reading and writing

skills in English. To fill up the year's credits, the students register for the Library Science 121 course in the second semester. The result is that a large portion of the students enrolled for the Library Science 121 course does not use English as its mother tongue.

Figure 3 - Mother tongue languages



9.2.4.1 English as home language

Because research has shown that English is a factor that influences the information literacy of students, the baseline information literacy skills of students with English as home language was compared with students who have another language as mother tongue in chapter 11. Detailed results are recorded in table 8.

Table 8 - English as mother tongue

Mother tongue	Group		Year			
			2003 253	2004 120	2005 110	Total 483
English yes	Pre	Count	13	15	14	42
		%	5.1%	12.5%	12.7%	8.7%
	Control	Count	30	7	8	45
		%	11.9%	5.8%	7.3%	9.3%
	Total	Count	43	22	22	87
		%	17.0%	18.3%	20.0%	18.0%
English no	Pre	Count	123	61	76	260
		%	48.6%	50.8%	69.1%	53.8%
	Control	Count	87	37	12	136
		%	34.4%	30.8%	10.9%	33.1%
	Total	Count	210	98	88	396
		%	83.0%	81.7%	80%	82.0%

The overwhelming majority of incoming Arts students do not have English as their mother tongue. Only 18% of the students use English as their first language.

9.2.5 Home region

Because the University of the Western Cape does not only attract students from the area where it is situated, students were asked to fill in on the questionnaire the region where they are from. Three tables are used to summarize the regions as indicated by 480 students (3 were left blank).

9.2.5.1 Home regions outside Africa

Table 9 indicates students who come from countries outside of Africa:

Table 9 - Home regions outside Africa

Region		Groups								Total
		Pre				Control				
		2003	2004	2005	Total	2003	2004	2005	Total	
Outside Africa	China	1	3	3	7	0	0	0	0	7
	Korea	1	0	0	1	0	0	0	0	1
	Total	2	3	3	8	0	0	0	0	8

Of the 480 students only 8 (1.7%) students came from countries outside Africa. As the University of the Western Cape use English as teaching medium, students from China and Korea enrol here to improve their English language skills. Because they enrol during the first semester for the English Intensive course, most of them will register for the Library Science 121 course in the second semester.

9.2.5.2 Home regions in Africa (not South Africa)

Table 10 reflects regions in Africa but not part of the Republic of South Africa. Fifteen students (3.1%) came from African counties outside the Republic of South Africa.

Table 10 - Home regions Africa (not South Africa)										
Region		Groups								Total
		Pre				Control				
		2003	2004	2005	Total	2003	2004	2005	Total	
Africa	Botswana	5	0	0	5	1	0	1	2	7
	Ghana	0	0	0	0	1	1	0	2	2
	Lesotho	1	0	0	1	0	0	0	0	1
	Mozambique	1	0	0	1	0	0	0	0	1
	Namibia	2	0	0	2	0	0	0	0	2
	Rwanda	0	1	0	1	0	0	0	0	1
	Zimbabwe	0	0	0	0	1	0	0	1	1
	Total	9	1	0	10	3	1	1	5	15

9.2.5.3 Home regions in South Africa

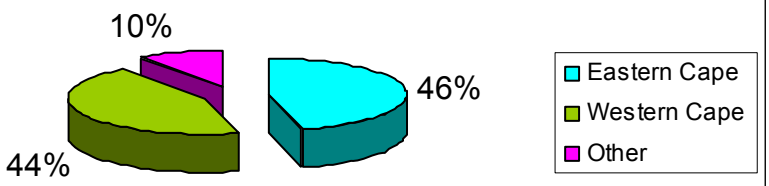
Table 11 summarizes which regions in the Republic of South Africa students are from.

Table 11 - Home regions South Africa										
Region		Groups								Total
		Pre				Control				
		2003	2004	2005	Total	2003	2004	2005	Total	
South Africa	Eastern Cape	55	35	42	132	41	20	17	78	210
	Orange Free State	0	2	0	2	0	0	0	0	2
	Gauteng	1	3	3	7	3	1	0	4	11
	KwaZulu Natal	1	0	2	3	1	0	0	1	4
	Limpopo	1	0	1	2	2	1	0	3	5
	Mpumalanga	5	0	0	5	1	0	0	1	6
	Northern Province	0	0	0	0	1	1	0	2	2
	North West Province	1	0	0	1	1	1	0	2	3
	Northern Cape	2	2	4	8	4	2	1	7	15
	Western Cape	53	34	36	123	50	16	10	76	199
	Total	119	76	88	283	104	32	28	164	457

The majority (95.2%) of all the respondents are from the Republic of South Africa. Of the students enrolled for the Library Science 121 course (pre-group) 132 students (43.5%) hail from the Eastern Cape while 123 students (43.5%) live locally in the Western Cape. The third largest group is the 15 students (3.3%) hailing from the Northern Cape. In the case of the control group the same pattern emerged. Seventy eight students

(47.6%), seventy six (46.3%) and seven (4.3%) are from the Eastern, Western and Northern Cape respectively.

Figure 4 - Home regions South Africa



9.2.5.4 Home region and English as mother tongue

As indicated in table 8 eighty seven of the respondents indicated that their mother tongue is English. The distribution of these 87 by regions is demonstrated in table 12. The clear majority (83.9%) of students, whose mother tongue is English, hails from the Western Cape. The second largest group (9.2%) is from the Northern Cape. Only 3.5% of students from both the Eastern Cape and the Northern Province use English as their home language.

Table 12 - English mother tongue & region

Region		English mother tongue								
		Group								
		Pre				Control				Total 87
		2003 13	2004 15	2005 14	Total 42	2003 30	2004 7	2005 8	Total 45	
Eastern Cape	Count	1	0	2	3	0	0	0	0	3
	%	7.7	0.0	14.3	7.1	0.0	0.0	0.0	0.0	3.5
Western Cape	Count	12	14	12	38	29	6	0	35	73
	%	92.3	93.3	85.7	90.5	96.7	85.7	0.0	77.8	83.9
Northern Cape	Count	0	1	0	1	6	0	1	7	8
	%	0.0	6.7	0.0	2.4	20.0	0.0	1.3	15.6	9.2
Northern Province	Count	0	0	0	0	1	2	0	3	3
	%	0.0	0.0	0.0	0.0	3.3	28.6	0.0	6.7	3.5

9.3 Computers

Because computer literacy or as it is called currently, digital academic literacy, is part of being information literate, it was decided to get information on how experienced with regards to the use of computers incoming Arts students are.

9.3.1 Own computer

Students were asked to indicate (question 2.1) by marking either the yes or the no option on the questionnaire, whether they had access to their own computers prior to arriving at the University of the Western Cape. Table 13 shows that 59 (19.5%) students in the pre-group and 48 (26.5%) in the control group possessed their own computers. In total, the 107 students with their own computers were only 22.2% of the respondents. It can be concluded that incoming Arts students on average did not have the privilege of owning their own computers.

Table 13 - Own computer

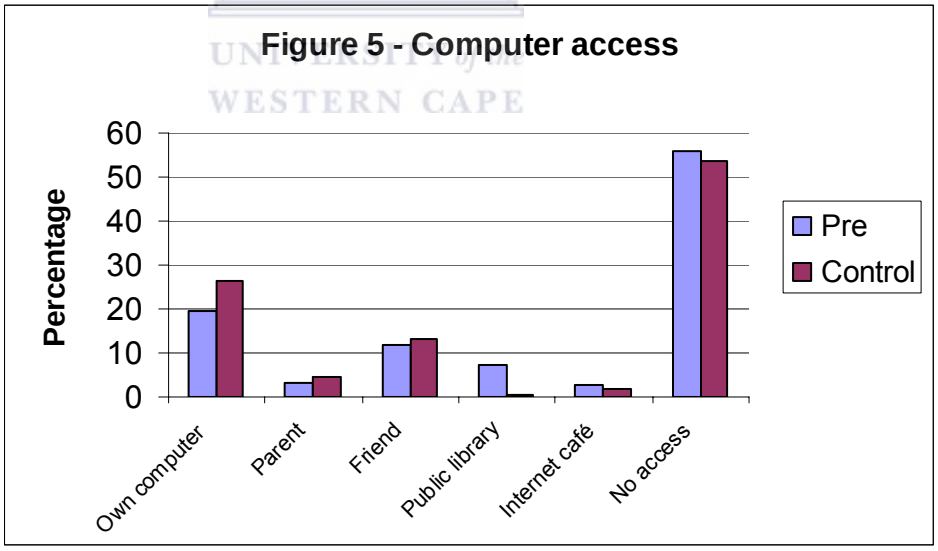
	Group								All
	Pre				Control				Total
	2003 127	2004 85	2005 90	Total 302	2003 117	2004 44	2005 20	Total 181	483
Yes	18	16	25	59	34	8	6	48	107
	14.2	18.8	27.8	19.5	29.1	18.2	30.0	26.5	22.2%
No	109	69	65	243	83	36	14	133	376
	85.8	81.2	72.2	80.5	70.9	81.8	70.0	73.5	77.9%

9.3.2 Computer access

Those 376 students who did not possess their own computers were then asked to indicate if they had other means of getting access to computers. The options parent's office, friend's house, public library, Internet café and other were given. No student used the other option. A summary of the other options is given in table 14 on the next page. From the results it is clear that of the 376 students who don't own computers, only 111 have other means of getting access to computers. The remaining 265 students (70.5%) had no access to computers prior to arriving at university.

Table 14 - Computer access										
		Group								All
		Pre				Control				Total 376
		2003 109	2004 69	2005 65	Total 243	2003 83	2004 36	2005 14	Total 133	
Parent	Count	4	3	3	10	5	3	0	8	18
	%	3.7	4.4	4.6	4.1	6.0	8.3	0.0	6.0	4.8
Friend	Count	17	8	10	35	20	2	2	24	59
	%	15.6	11.6	15.4	14.4	24.1	5.6	14.3	18.1	15.7
Public library	Count	17	1	4	22	1	0	0	1	23
	%	15.6	1.5	6.2	9.1	1.2	0.0	0.0	0.8	6.1
Internet café	Count	8	0	0	8	2	0	1	3	11
	%	7.3	0.0	0.0	3.3	2.4	0.0	7.1	2.3	2.9
No access	Count	63	57	48	168	55	31	11	97	265
	%	57.8	82.6	73.8	69.1	66.3	86.1	78.6	72.9	70.5

The fact that incoming students do not have their own computers and that only a small percentage have assess to a computer correlates with the findings of De Jager and Nassimbeni (2002: 179), Hart (1999: 78), Maughan (2001: 85) and O'Hanlon (2002b: 63) who indicated that most tertiary students are not computer literate because they were not exposed to computers during their school years.

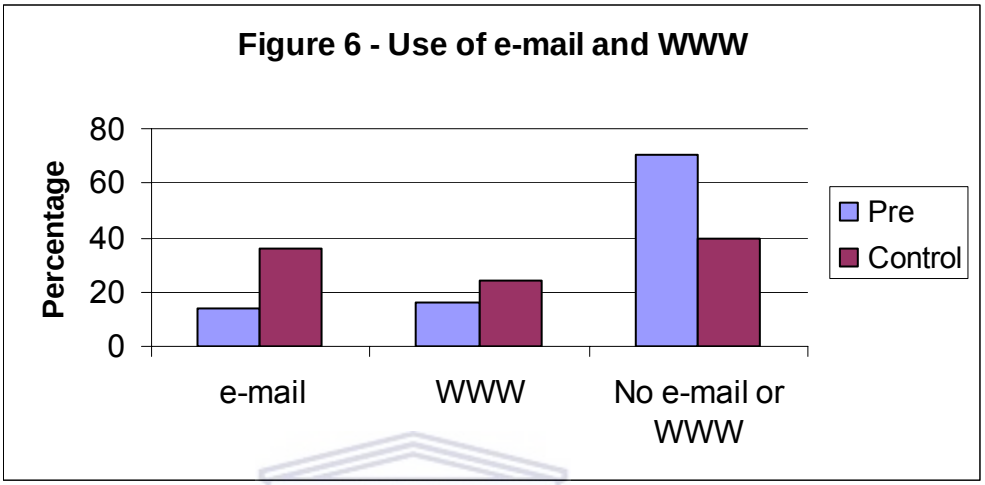


9.3.3 Use of e-mail, WWW and Internet

Students were then asked (question 2.3 and 2.4) to indicate, regardless of how they get access to a computer, whether they use e-mail and whether they access the WWW and Internet. Detailed results are shown in table 15 with a summary in figure 6:

Table 15 - Use of e-mail and WWW										
		Group								All
		Pre				Control				Total
		2003 136	2004 76	2005 90	Total 302	2003 117	2004 44	2005 20	Total 141	483
e-mail	Count	17	9	16	42	32	14	5	51	93
	%	12.5	11.8	17.8	13.9	27.4	31.8	25.0	36.2	19.3
WWW	Count	19	11	16	46	11	16	7	34	80
	%	14.0	14.5	17.8	15.2	9.4	36.4	35.0	24.1	16.5

Figure 6 - Use of e-mail and WWW



It is evident from the results that the control group used e-mail and the World Wide Web significantly more than the pre-group. Of the pre-group only 13.9% compared to the 36.2% of the students in the control group, send and/or receive e-mails prior to arriving on campus. In the case of using the World Wide Web 15.2% compared to 24.1% of students in the pre-group and control groups respectively responded positively. Of all the respondents, just 19.3% have been using e-mails and 16.5% were familiar with searching the World Wide Web when they register as students at the University of the Western Cape.

One can presume that the students who have their own computers or those that have access to computers will be the most likely ones to experiment with e-mailing and surfing the Internet. If only the students who own computers (107) and who have access to computers (111) are considered as respondents, 42.7% and 50.9% of them e-mail others or surf the Internet respectively – a much higher percentage of usage. Students without computers or easy access to computers prior to arriving at UWC, will need time to get familiarized and experienced with for

example key board skills before e-mailing and Internet searching can be attempted.

These findings correlate with those of Ramakrishnegowda and Walmiki (2004: 367) as well as Walker (1999: on-line) who indicated that students don't have an extensive understanding of the purpose and possibilities of the Internet and are not able to use it.

9.3.4 Use of Internet and English

Research by De Ruiter (2002: 200), Edwards and Bruce (2006: 366) as well as Merchant and Hepworth (2002: 84) have shown that users who do not have a good understanding of English, might experience problems to find information using the Internet. Students will especially find it difficult to choose keywords as search terms and to navigate the screens. Table 16 below reflects the number of students who has English as their mother tongue and has experience in using the Internet.

Table 16 - Use of Internet and English

English mother tongue		Internet usage								
		Group								All
		Pre				Control				Total
		2003 19	2004 11	2005 16	Total 46	2003 11	2004 16	2005 7	Total 34	80
English	Count	7	9	10	26	9	7	4	20	46
	%	36.8	81.1	62.5	56.5	81.8	43.8	57.1	58.8	57.5%

Of the 80 students who indicated that they have experience in using the Internet, 26 from pre-group and 20 from the control group do have English as their home language. Only 24 Afrikaans speaking and 10 Xhosa speaking students indicated that they are familiar with Internet searching prior to arriving at the UWC.

The 46 students with English as mother tongue and experienced in using the Internet form only 9.5% of the total respondents. It can therefore be expected that the majority of incoming Arts students at UWC might have problems with the usage of English with regards to Internet searches.

9.4 Access to school libraries

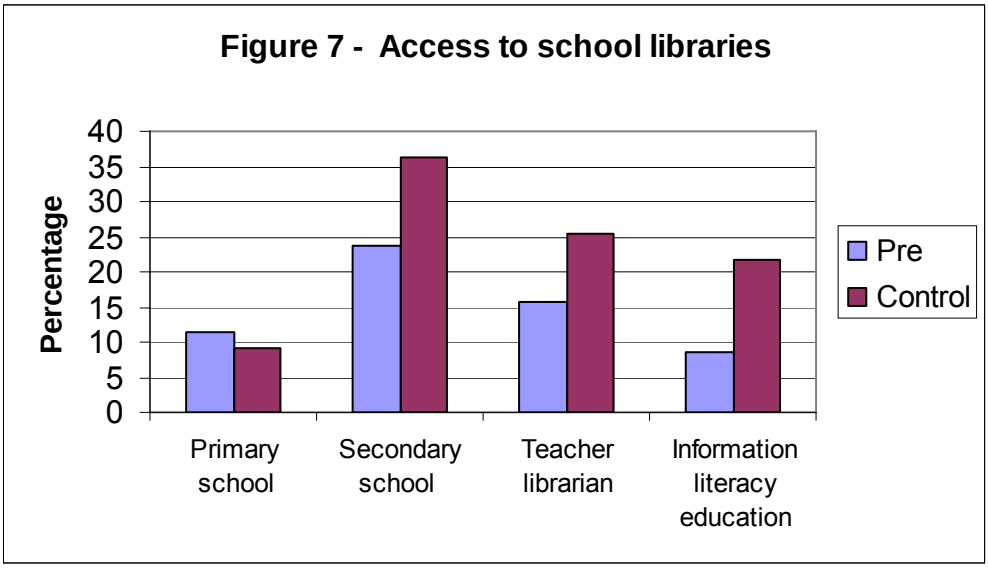
Information literacy should be part of primary and secondary school curricula. To assess respondents' experience with school libraries and teacher librarians, they were asked to indicate (question 3.1 – 3.4) whether the schools that they attended had school libraries and if the school library was managed by a teacher librarian and if book education or information literacy classes were offered. Results are given in table 17 and summarized in figure 7.

Table 17 – Access to school libraries

		Group								All
		Pre				Control				Total 483
		2003 136	2004 76	2005 90	Total 302	2003 117	2004 44	2005 20	Total 110	
Primary School	Count	20	3	12	35	10	0	0	10	45
	%	14.7	4.0	13.3	11.5	8.6	0.0	0.0	9.1	9.3
Secondary School	Count	36	8	28	72	36	4	0	40	112
	%	26.5	10.5	31.1	23.8	30.8	9.1	0.0	36.4	23.2
Teacher Librarian	Count	22	3	22	47	24	4	0	28	75
	%	16.2	4.0	24.4	15.6	20.5	9.1	0.0	25.5	15.5
Info skill teaching	Count	12	0	14	26	20	4	0	24	50
	%	8.8	0.0	15.6	8.6	17.1	9.1	0.0	21.8	10.4

In both the pre- and the control groups, the percentage of students who attended secondary schools with a school library is much higher than those with libraries in primary schools. It is still only 23.8% (pre-group) and 36.4% (control group) of respondents who had school libraries at secondary schools. Even less (15.6% and 25.5% respectively) of these school libraries were managed by a teacher librarian and only 10.4% of all the students received any form of the traditional book education or information literacy skills training.

These results correlate with findings by De Jager and Nassimbeni (2002: 179), Hart (1999: 78) as well as Maughan (2001: 85) that due to the lack of school libraries and teacher librarians the majority of South African learners are not library literate.



9.5 Pubic library use

9.5.1 Public library membership

Respondents were asked to indicate (question 4.1) if they knew that they can get membership of a public library without paying. Table 18 shows that of the 483 respondents, 101 indicated that they did not know that public library membership is free of charge. Of the remaining 382 respondents who knew that it will not cost them anything, only 100 (20.7%) are members (question 4.2) of one or another public library.

Table 18 - Public library membership

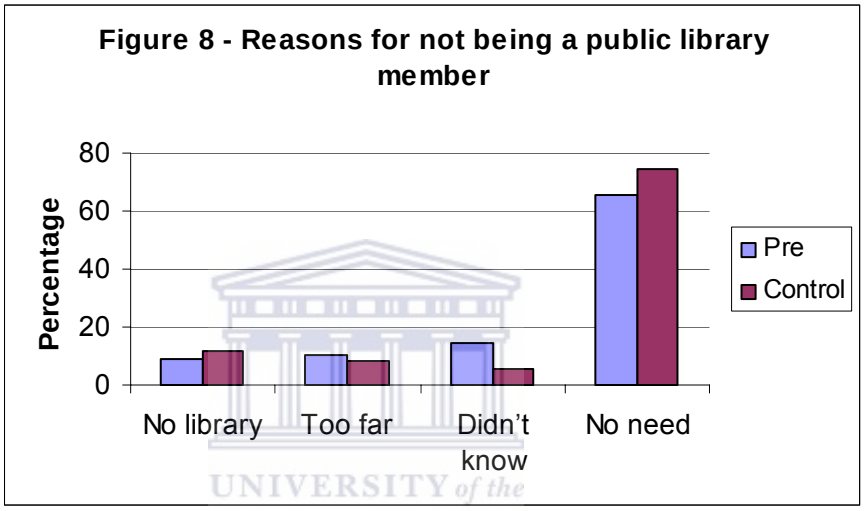
		Group								All
		Pre				Control				Total 483
		2003 136	2004 76	2005 90	Total 302	2003 117	2004 44	2005 20	Total 110	
Know Payment	Count	26	19	15	60	27	9	5	41	101
	%	19.1	25.0	16.7	19.9	23.1	20.5	25.0	37.3	20.9
Member	Count	39	14	23	76	13	11	0	24	100
	%	28.7	18.4	25.6	25.2	11.1	25.0	0.0	21.8	20.7

Twenty seven of the 100 students, who are public library members, indicated that they attended secondary schools with a school library. It does not look as if the exposure to school libraries motivated students to use the information services offered by a public library. A reason might be that a reading culture and habit of using information should be established

at an early age. As very few respondents were exposed to a library at a primary school, such a habit was not formed. Research by Cameron (2004: 228), Jacobson and Mark (2000: 276) as well as Maughan (2001: 72) to name a few has shown that the trend not to use libraries even if research for assignments is required is found at tertiary institutions as well.

9.5.1.1 Reason for not being a public library member

All the students who indicated that they are not members (383 students) of a public library were asked to supply reasons for not getting membership. Results are given in table 19 and summarized in figure 8.



Most (69.2%) of all the students (both the pre- and control group) indicated that they did not see the need to become a member of a public library. One can presume that they have not realized the value of a public library and the services it offers yet.

Table 19 – Reasons for not being a public library member

		Group								All
		Pre				Control				Total 383
		2003 83	2004 76	2005 67	Total 226	2003 98	2004 37	2005 22	Total 157	
No library	Count	9	6	6	21	9	4	5	18	39
	%	10.8	7.9	9.0	9.3	9.2	10.8	22.7	11.5	10.2
To far	Count	7	9	8	24	7	5	1	13	37
	%	8.4	11.8	11.9	10.6	7.1	13.5	4.6	8.2	9.7
Didn't know	Count	15	10	8	33	4	3	2	9	42
	%	18.1	13.2	11.9	14.6	4.1	8.1	9.1	5.7	11.0
No need	Count	52	51	45	148	78	25	14	117	265
	%	62.7	67.1	67.2	65.5	70.6	67.6	63.6	74.5	69.2

Other reasons for not gaining membership are either because they did not know how to become a member (11.0%) or because there is not a public library in their community or town (10.2%) or because the library is too far away (9.7%).

9.5.2 Frequency of public library visits

Respondents who are public library members (100 students) were asked (question 4.4) to indicate how often they visit the library.

Table 20 – Frequency of public library visits

		Group								All
		Pre				Control				Total
		2003 39	2004 14	2005 23	Total 76	2003 13	2004 11	2005 0	Total 24	100
Daily	Count	4	0	2	6	1	0	0	1	7
	%	10.3	0.0	8.7	7.9	7.7	0.0	0.0	4.2	7.0
Weekly	Count	7	0	3	10	2	0	0	2	12
	%	18.0	0.0	13.0	13.2	15.4	0.0	0.0	8.3	12.0
Every 2 weeks	Count	4	1	1	6	1	2	0	3	9
	%	10.3	7.1	4.4	7.9	7.7	18.2	0.0	12.5	9.0
Monthly	Count	6	2	5	13	3	5	0	8	21
	%	15.4	14.3	21.8	17.1	23.1	45.5	0.0	33.3	21.0
Every few months	Count	18	11	12	41	6	4	0	10	51
	%	46.2	78.6	52.2	53.9	46.2	36.4	0.0	41.7	51.0

It is clear from the results given in table 20 that the majority of students (41.0%) visit the library only every few months. The tendency not to visit the library often occurred in both the pre- and control groups.

The role played by teachers in encouraging learners to use the library to do research for assignments is questioned here. As public librarians are prepared to accommodate learners, one can only presume that many South African teachers do not value or are ignorant about information literacy and that they encourage rote learning.

9.5.2 Resource usage public library

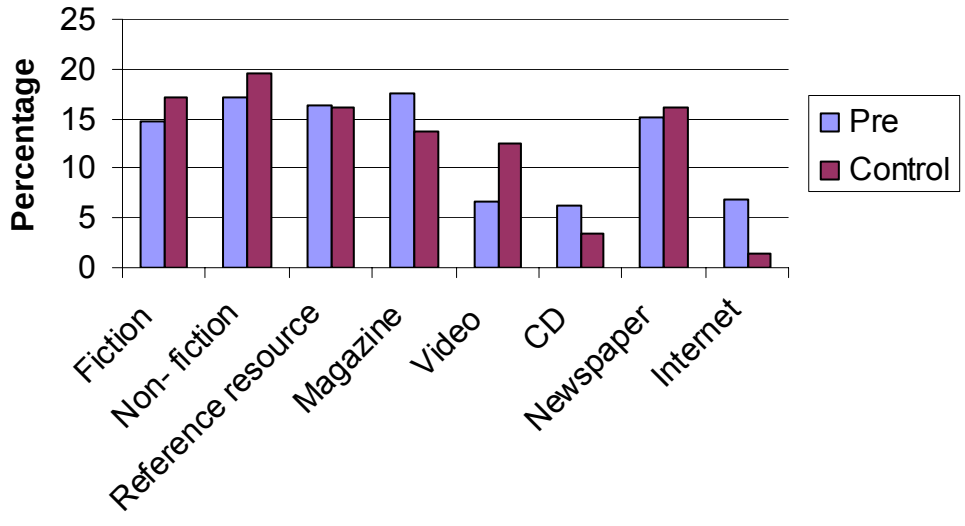
Members of a public library were asked (question 4.5) to indicate what type of resources in the public library they usually use. Options were fiction, non-fiction, reference resources, magazines, videos, CD, newspaper, Internet and other. Only one respondent has indicated with

the other option that she would borrow paintings from her local public library in the Western Cape. The rest of the respondents' material usage is reflected in table 21 and summarized in figure 9.

Table 21 – Resource usage public library

		Group								All
		Pre				Control				Total
		2003 187	2004 48	2005 84	Total 319	2003 57	2004 30	2005 0	Total 87	406
Fiction	Count	26	7	14	47	7	8	0	15	62
	%	13.9	14.6	16.7	14.7	12.3	26.7	0.0	17.2	15.3
Non-fiction	Count	31	5	16	52	12	5	0	17	69
	%	16.6	10.4	19.1	17.2	21.1	16.7	0.0	19.5	17.0
Reference resource	Count	35	10	8	53	9	5	0	14	67
	%	18.7	20.8	9.5	16.3	15.8	16.7	0.0	16.1	16.5
Magazine	Count	28	11	17	56	8	4	0	12	68
	%	15.0	22.9	20.2	17.6	14.0	13.3	0.0	13.8	16.8
Video	Count	11	6	4	21	9	2	0	11	32
	%	5.9	12.5	4.8	6.6	15.8	6.7	0.0	12.6	7.9
CD	Count	12	5	3	20	3	0	0	3	23
	%	6.4	10.4	3.6	6.3	5.3	0.0	0.0	3.5	5.7
Newspaper	Count	27	3	18	48	8	6	0	14	62
	%	14.4	6.3	21.4	15.1	14.0	20.0	0.0	16.1	15.3
Internet	Count	17	1	4	22	1	0	0	1	23
	%	9.1	2.1	4.8	6.9	1.8	0.0	0.0	1.5	5.7

Figure 9 - Resource usage public library



For the pre-group, magazine usage (17.6%) was the highest, followed by non-fiction (17.2%) and reference resources (16.3%). In comparison the control group used non-fiction (19.5%) most often, followed by fiction

(17.2%) and reference resources (16.1%). Both groups together made use of non-fiction (17.0%) followed by magazines (16.8%), reference resources (16.5%) and newspapers (15.3%) most often. Low usage of Internet (5.7%) might be because respondents are unfamiliar with how to use the Internet. The lack of CD and video players might be a reason for the relatively low usage of CD's (5.7%) and video recordings (7.9%).

9.5.4 Other usage of public library

When students were asked in question 4.6 to indicate for what else they use the public library for, the results were as follows:

Figure 10 - Other usage public library

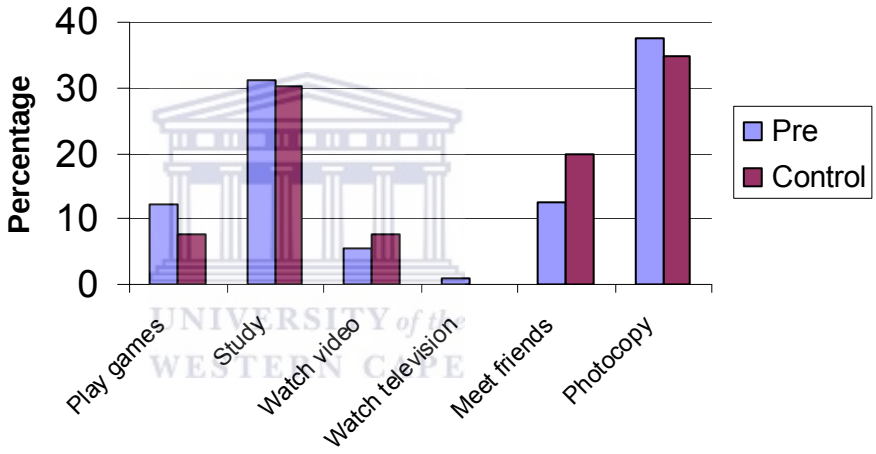


Table 22 - Other usage public library

		Group								All
		Pre				Control				Total
		2003 96	2004 34	2005 69	Total 199	2003 43	2004 23	2005 0	Total 66	265
Play games	Count	11	2	11	24	5	0	0	5	29
	%	11.5	5.9	15.9	12.1	11.6	0.0	0.0	7.6	10.9
Study	Count	30	11	21	62	11	9	0	20	82
	%	31.3	32.4	30.4	31.2	25.6	39.1	0.0	30.3	30.6
Watch video	Count	4	3	4	11	5	0	0	5	16
	%	0.4	8.8	5.8	5.5	11.6	0.0	0.0	7.6	6.0
Watch television	Count	1	1	0	2	0	0	0	0	2
	%	0.1	2.9	0.0	1.0	0.0	0.0	0.0	0.0	0.8
Meet friends	Count	11	4	10	25	10	3	0	13	38
	%	11.5	11.8	14.5	12.6	23.3	13.0	0.0	19.7	14.3
Photocopy	Count	39	13	23	75	12	11	0	23	98
	%	40.6	38.2	33.3	37.7	27.9	47.8	0.0	34.9	37.0

An overwhelming majority (37.0%) of the public library users used the library only to photocopy. Nearly thirty one percent used the library to study. This is an indication that many learners do not have a study space at home. The fact that 14.3% of the students use the library as a place to meet their friends might be an indication that they see the library as a safe environment to socialize. Library services like television, video recording and games offered are used only by a minority of students.

9.6 Experience with library catalogues

Prior experience with library catalogues was determined by four questions (4.7, 4.8, 4.9 and 4.10), namely how often have you used a card catalogue, how often have you used an on-line catalogue, are you able to locate items found in the catalogue in the library and if given a specific call or shelf number, will you be able to find it in the library. The results for the four questions are listed in table 23.

The majority of students have not used a card catalogue (91.1%) or an on-line catalogue (75.6%) either before they arrived on campus or in the six months since they have been on campus. Only one student indicated that she has already used both card and on-line catalogues many times. A small percentage (4.6%) of the total students will always find the items that they located in the catalogue.

When given a specific call or shelf number to find, students felt more confident in locating it in the library because 19.1% indicated that they will always find it. Only eight of all the students indicated that they will always locate resources found in the catalogue in the library by either determining the call or shelf number themselves or when given a specific call or shelf number.

The fact that students can't or will not use the catalogue as a retrieval tool was discovered by other researchers (Knight, 2002:18; Kunkel, Weaver

& Cook, 1996: 432 and Zondi, 1992: 205) as well. It seems as if it is an international phenomenon.

Table 23 - Experience with library catalogues

			Group								All
			Pre				Control				Total
			2003	2004	2005	Total	2003	2004	2005	Total	
			136	76	90	302	117	44	20	181	483
Card catalogue	**Many**	Count	0	0	0	0	2	0	1	3	3
		%	0.0	0.0	0.0	0.0	1.7	0.0	5.0	1.7	0.6
	Few	Count	20	1	10	31	8	1	0	9	40
		%	14.7	1.3	11.1	10.3	6.8	2.3	0.0	5.0	8.3
	Never	Count	116	75	80	271	107	43	19	169	440
		%	85.3	98.7	88.9	89.7	91.5	97.8	95.0	93.4	91.1
Online catalogue	**Many**	Count	3	5	8	16	28	13	1	42	58
		%	2.2	6.6	8.9	5.3	23.9	29.6	5.0	23.2	12.0
	Few	Count	30	13	10	53	2	2	6	10	63
		%	22.1	17.1	11.1	17.6	1.7	4.6	30.0	5.5	12.6
	Never	Count	103	58	72	233	87	29	14	130	363
		%	75.7	76.3	80.0	77.2	74.4	65.9	70.0	71.8	75.6
Card & online catalogue	**Many**	Count	1	0	0	1	0	0	0	0	1
		%	0.7	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2
	Few	Count	14	1	9	24	2	1	0	3	27
		%	10.3	1.3	11.0	8.0	1.7	2.3	0.0	1.7	5.6
Locate Items	**Always**	Count	4	1	3	8	10	3	1	14	22
		%	2.9	1.3	3.3	2.7	8.6	6.8	5.0	7.7	4.6
	Some-times	Count	34	27	32	93	36	13	11	60	153
		%	25.0	35.5	35.6	30.8	30.8	29.6	55.0	33.2	31.7
	Never	Count	98	48	55	201	71	28	8	107	308
		%	72.1	5.3	61.1	66.6	60.7	63.6	40.0	59.1	63.8
Use call no	**Always**	Count	34	3	18	55	28	6	3	37	92
		%	25.0	4.0	20.0	18.2	23.9	13.6	15.0	20.4	19.1
	Maybe	Count	33	17	24	74	21	1	4	26	100
		%	24.3	22.4	26.6	24.5	18.0	2.3	20.0	14.4	20.7
	Never	Count	69	56	48	173	68	37	13	118	291
		%	50.7	73.7	53.3	57.3	58.1	84.1	65.0	65.2	60.3
Locate & call #	**Always**	Count	2	0	2	4	4	0	0	4	8
		%	1.5	0.0	2.2	1.3	3.4	0.0	0.0	2.2	4.1

9.6.1 Ability to locate library resources

The questions whether students will be able to locate resources found in the catalogue and using a specific call or shelf number to find an item on the shelf, were repeated in the post-test. In comparison the students were after attending the Library Science 121 course, much more confident in locating resources in the library. The majority (73.4%) of the students compared to the 8% of the pre-group felt that they will always be able to use the catalogue record to locate resources in the library. More than eighty percent (80.7%) compared to the 18.2% of the pre-group felt

confident that when given a call or shelf number they will be able to find it in the library. Detailed results are given in table 24.

Table 24 - Ability to locate library resources

			Group							
			Pre				Control			
			2003 136	2004 76	2005 90	Total 302	2003 81	2004 76	2005 50	Total 207
Locate resource	**Always**	Count	4	1	3	8	65	47	40	152
		%	2.9	1.3	3.3	2.7	80.3	61.8	80.0	73.4
	Some-times	Count	34	27	32	93	7	29	10	46
		%	25.0	35.5	35.6	30.8	8.6	38.2	20.0	22.2
	Never	Count	98	48	55	201	9	0	0	9
		%	72.1	63.2	61.1	66.6	11.1	0.0	0.0	4.4
Use call number	**Always**	Count	34	3	18	55	72	54	41	167
		%	25.0	4.0	20.0	18.2	88.9	71.1	82.0	80.7
	Maybe	Count	33	17	24	74	9	22	9	40
		%	24.3	22.4	26.6	24.5	11.1	29.0	18.0	19.3
	Never	Count	69	56	48	173	0	0	0	0
		%	50.7	73.7	53.3	57.3	0.0	0.0	0.0	0.0

9.6.2 Reasons not locating resources in the library prior/without Library Science 121

Students who indicated that they are not able to locate resources in the library were asked to supply reasons why they are not able to find it. Results are shown in table 25.

Table 25 - Reasons not locating library resources prior/ without Library Science 121

		Group								All
		Pre				Control				Total
		2003 176	2004 85	2005 52	Total 313	2003 74	2004 35	2005 28	Total 137	450
No info in library	Count	8	3	7	18	15	6	1	22	40
	%	4.6	3.5	13.5	5.8	20.3	17.1	3.6	16.1	8.9
Irrelevant info	Count	20	15	17	52	20	9	3	32	84
	%	11.4	17.7	32.7	16.6	27.0	25.7	10.7	23.4	18.7
Language	Count	8	8	2	18	11	7	1	19	37
	%	4.6	9.4	3.9	5.8	14.9	20.0	3.6	13.9	8.2
Too many	Count	41	11	19	71	17	7	5	29	100
	%	23.3	12.9	36.5	22.7	23.0	20.0	17.9	21.2	22.2
Don't know	Count	69	20	6	95	3	4	12	19	114
	%	39.2	23.5	11.5	30.4	4.1	11.4	42.9	13.9	25.3
Not on shelf	Count	30	28	1	59	8	2	6	16	75
	%	17.1	32.9	1.9	18.9	10.8	5.7	21.4	11.7	16.7

Of the 450 students who responded to the question, the most (25.3%) indicated that they did not find library resources in the library because they do not know how to use the call number or on what level it is located in the library. One hundred students (22.2%) retrieved too many catalogue records and did not even try to locate some of the listed resources. The reason for finding too many catalogue records might be that they are using the wrong key words and that they do not know how to refine their searches. Using the wrong key words might also be the reason why 18.7% and 8.9% respectively of students found irrelevant or no information.

The reason why 75 students (16.7%) did not find the items that they were looking for on the shelves, might be that they do not know how to check the item status of the material in the catalogue record before trying to find it, that they do not know where to find special collections like governmental publications in the library or that they do not understand the Dewey Classification Scheme and how library items are arranged on the shelves. More practical hands-on work using the catalogue and finding items in the library as suggested by Cameron (2004: 213) might result in more students locating the information they are looking for.

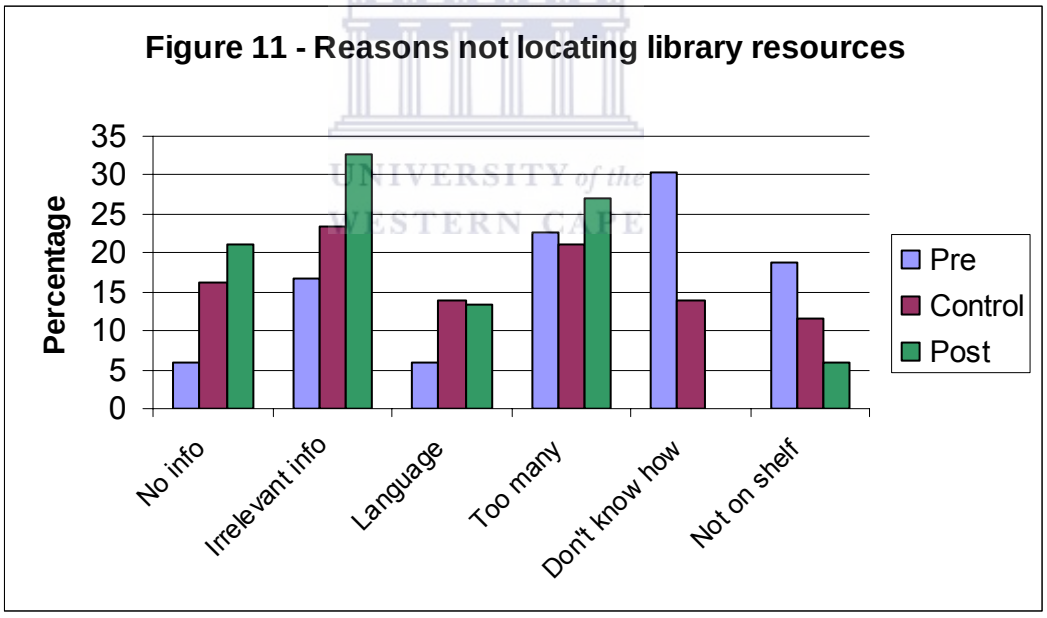
9.6.3 Reasons not locating items in the library post Library Science 121

Respondents of the post-group were asked again after completing the Library Science 121 course to supply reasons why library material could not be found on the shelves.

Although the number of students in the post-group who did not know how to locate items, dropped from ninety five to zero, there were still eleven whose searches resulted in no hits. Seventeen students still found irrelevant information and the search results of fourteen students were too many hits. Only three students indicated that the items that they were looking for were not on the shelf. Detailed responses are recorded in table 26.

Table 26 - Reasons not locating library resources post Library Science 121										
		Group								All
		Pre				Post				Total
		2003 176	2004 85	2005 52	Total 313	2003 8	2004 31	2005 13	Total 52	365
No info in library	Count	8	3	7	18	1	9	1	11	29
	%	4.6	3.5	13.5	5.8	12.5	29.0	7.7	21.2	8.0
Irrelevant info	Count	20	15	17	52	3	9	5	17	69
	%	11.4	17.7	32.7	16.6	37.5	29.0	38.5	32.7	18.9
Language	Count	8	8	2	18	0	6	1	7	25
	%	4.6	9.4	3.9	5.8	0.0	19.4	7.7	13.5	6.9
Too many	Count	41	11	19	71	3	5	6	14	85
	%	23.3	12.9	36.5	22.7	37.5	16.1	46.2	26.9	23.3
Don't know	Count	69	20	6	95	0	0	0	0	95
	%	39.2	23.5	11.5	30.4	0.0	0.0	0.0	0.0	26.0
Not on shelf	Count	30	28	1	59	1	2	0	3	62
	%	17.1	32.9	1.9	18.9	12.5	6.5	0.0	5.8	17.0

The results of both tables 25 and 26 are combined and summarized in figure 11:



9.7 Reading habits

Students were asked first (question 5.1) to indicate whether they regard themselves as readers. The students who indicated that they are not readers had to supply reasons (question 5.2) why they are not readers. The students who regarded themselves as readers were asked to indicate

which type of material (question 5.3) they have read during the last six months. The results are reflected in tables 27, 28 and 29.

9.7.1 Regarded as being readers

More than half (279) of the 483 students (57.8%) regarded themselves as readers. The highest percentage of readers (56.8%) was found in the 2004 control group, followed by the 52.2% in the 2005 pre-group and the 51.3% in the 2004 pre-group. The average percentage for the pre-group though, was 62.9% compared to the 49.2% of the control group.

Table 27 - Students being readers

		Group								All
		Pre				Control				Total
		2003 136	2004 76	2005 90	Total 302	2003 117	2004 44	2005 20	Total 181	483
Readers	Count	104	39	47	190	55	25	9	89	279
	%	76.5	51.3	52.2	62.9	47.0	56.8	45.0	49.2	57.8

9.7.2 Reasons for not being readers

In response to question 5.2, 203 students who did not regard themselves as readers, were asked to supply reasons why they are not readers. The three options 1) no access to reading material, 2) not interested in reading and 3) no need seen for reading were supplied. An “other” open ended option was also supplied.

Only 95 of the 204 students who did not regard themselves as readers supplied reasons for not being a reader. It seems that students do not really have valid reasons for not reading. An explanation for that might be that research has shown that South Africans do not have a culture of reading.

One student used the other option and indicated that she does not have time to read. Results of the other reasons are summarized in table 28:

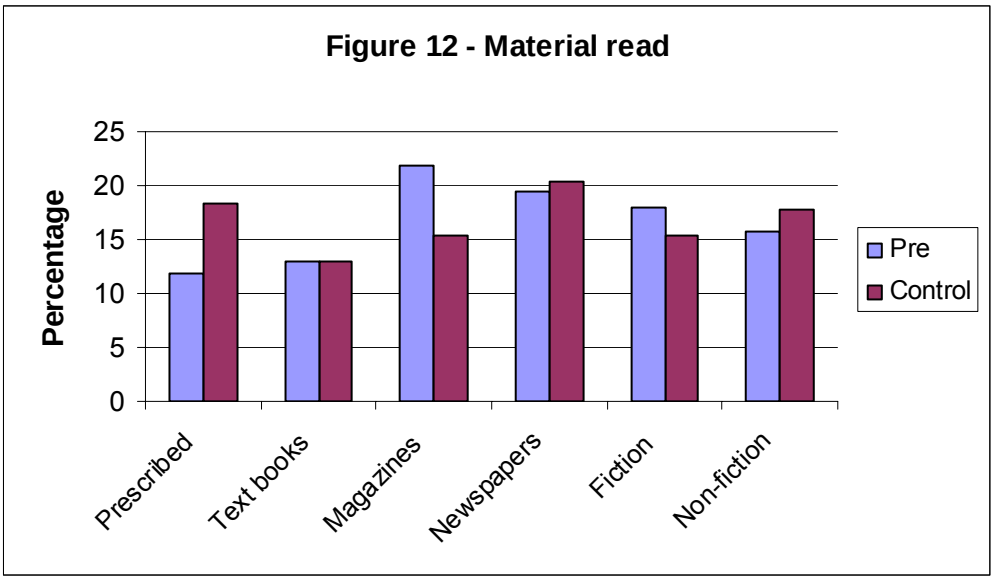
Table 28 - Reasons not being readers										
		Group								All
		Pre				Control				Total
		2003 32	2004 37	2005 43	Total 112	2003 62	2004 19	2005 11	Total 92	204
No material	Count	4	3	7	14	5	2	1	8	22
Not interested	Count	6	14	15	35	17	8	1	26	51
No need	Count	8	4	3	15	3	1	2	6	21
Other No time	Count	0	0	0	0	0	0	1	1	1
Total	Count	18	21	25	64	25	11	5	41	95

9.7.3 Type of material read

Regardless of whether students regarded themselves as readers or not, they were asked to indicate (question 5.3) what type of reading material they have read during the previous six months. Results are as follows:

Table 29 - Material read										
		Group								All
		Pre				Control				Total
		2003 204	2004 86	2005 104	Total 394	2003 102	2004 52	2005 9	Total 163	557
Pre Scribed	Count	21	11	15	47	22	7	1	30	77
	%	10.3	12.8	14.4	11.9	21.6	13.5	11.1	18.4	13.8
Text Book	Count	27	11	13	51	14	6	1	21	72
	%	13.2	12.8	12.5	12.9	13.7	11.5	11.1	12.9	12.9
Magazine	Count	42	23	21	86	15	10	0	25	111
	%	20.6	26.7	20.2	21.8	14.7	19.2	0.0	15.3	19.9
News Paper	Count	39	17	21	77	17	13	3	33	110
	%	19.1	19.8	20.2	19.5	16.7	25.0	33.3	20.3	19.8
Fiction	Count	37	12	22	71	15	10	0	25	96
	%	18.1	14.0	21.2	18.0	14.7	19.2	0.0	15.3	17.2
Non-Fiction	Count	38	12	12	62	19	6	4	29	91
	%	18.6	14.0	11.5	15.8	18.6	11.5	44.4	17.8	16.3
Total	Count	204	86	104	394	102	52	9	163	557

From table 29, it is clear that most students prefer to read magazines (19.9%) and newspapers (19.8%). Subsidiary to the more popular, easy to read magazines and newspapers, are respectively fiction books (17.2%) and non-fiction books (16.3%). Prescribed readings (13.8%) and text books (12.9%) were last on the student's priority lists.



These findings correlates to the types of material borrowed from public libraries as indicated in table 21. Non-fiction books (17.0%), magazines (16.8%) and newspapers (15.3%) were the most often borrowed.

As part of both the pre- and control groups, twenty students indicated that they have read all of the mentioned material over the past six months.

9.8 Importance of being information literate

9.8.1 Importance of being information literate prior/without Library Science 121

Respondents were asked to indicate (question 6.1) how important they rate being information literate. Since 62.3% (table 30) of the pre-group rated being information literate as very important and 26.8% as important, it can be deduced that the majority of the group (89.1%) regarded information literacy as an essential skill. It might be the reason why they opted to do the course. In comparison, only 34.3% and 44.2% of the control group regarded being information literate as very important and important respectively. Thirty nine percent of the control group respondents rated information literacy as of some importance or of no importance and can be the reasons why they opted not to enrol for the Library Science 121 course.

Table 30 - Importance of being information literate prior/ without Library Science 121										
		Group								All
		Pre				Control				Total
		2003 136	2004 76	2005 90	Total 302	2003 117	2004 44	2005 20	Total 181	483
Very important	Count	99	33	56	188	45	15	2	62	250
	%	72.8	43.4	62.2	62.3	38.5	34.1	10.0	34.3	51.8
Important	Count	25	31	25	81	48	22	10	80	161
	%	18.4	40.8	27.8	26.8	41.0	50.0	50.0	44.2	33.3
Some important	Count	12	12	8	32	23	6	6	35	67
	%	8.8	15.8	8.9	10.6	19.7	13.6	30.0	19.3	13.9
Not Important	Count	0	0	1	1	1	1	2	4	5
	%	0.0	0.0	1.1	0.3	0.9	2.3	10.0	2.2	1.0

9.8.2 Importance of being information literate post Library Science 121

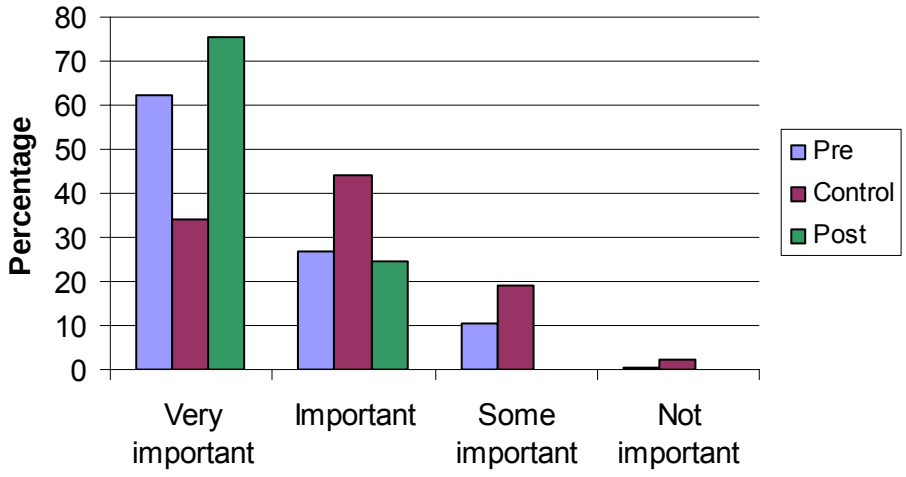
The students who completed the post-test were again asked how important they rate being information literate. Comparing the pre- and post-groups' responses to the question, it is clear that the students who completed the information literacy course realized the value of information literacy.

Table 31 - Importance of being information literate post Library Science 121									
		Group							
		Pre				Post			
		2003 136	2004 76	2005 90	Total 302	2003 81	2004 76	2005 50	Total 207
Very important	Count	99	33	56	188	68	50	38	156
	%	72.8	43.4	62.2	62.3	84.0	65.8	76.0	75.4
Important	Count	25	31	25	81	13	26	12	51
	%	18.4	40.8	27.8	26.8	16.1	34.2	24.0	24.6
Some important	Count	12	12	8	32	0	0	0	0
	%	8.8	15.8	8.9	10.6	0.0	0.0	0.0	0.0
Not important	Count	0	0	1	1	0	0	0	0
	%	0.0	0.0	1.1	0.3	0.0	0.0	0.0	0.0

From table 31 it can be seen that all the students who did the Library Science 121 course regarded being information literate as very important (75.4%) or important (24.6%). The percentage of students in the post-group (75.4%) regarding information literacy as very important is

significantly higher than that of the pre-group (62.3%) as well as the control group (34.3%). Tables 30 and 31 are summarized in figure 13:

Figure 13 - Importance of being information literate



9.9 Conclusion

After analysing the data gathered from 2003 till 2005 from the demographic section, computer access prior to registering at UWC, school library access, public library usage and reading habits of the questionnaire, the following profile of an incoming Arts student at UWC emerged :

Significantly more (66.3%) students were female. The age of the incoming Arts UWC student will range from 17 to 48 years old, but will most likely have an average age of 20 years and 8.5 months.

The majority (47.3%) of students mother tongue will be Xhosa - English (16.9%) and Afrikaans (14.8%) as mother tongue are far in the minority.

Most students (43.5%) will hail from the Eastern Cape while slightly less live locally in the Western Cape. Only 3.1% of the students came from

African countries outside the Republic of South Africa and a few (1.7%) from countries outside the African continent.

The majority of students with English as their mother tongue hail from the Western Cape (83.9%). Only 3.5% of students from both the Eastern Cape and the Northern Province use English as their home language.

Few students own computers and the majority are not familiar in using e-mail and the Internet. Of the students who did not possess their own computers, less than a third had other means of getting access to computers. The majority of students had no access to computers prior to arriving at university. A very small percentage of students will have English as their home language and experience in Internet searching. It can therefore be expected that the majority of incoming Arts students might have problems with the usage of English with regards to Internet searches.

The minority of respondents attended secondary schools with school libraries managed by a teacher librarian and received any form of the traditional book education or information literacy skills training. Exposure to school libraries did not motivate students to use the information services offered by a public library. A reason might be that a reading culture and use of information should be established at an early age. Although some students had a valid reason (no public library in the area) for not being members of public libraries, most (69.2%) of them indicated that they did not see the need to become a member of a public library. One can presume that they have not realized the value of a public library and the services it offers yet.

As students are ignorant about how to become a public library member or that membership is free of charge, the minority are members of one or other public library. There is furthermore a tendency by those students who were public library members not to visit the library often. The role played by teachers in encouraging learners to use the library to do

research for assignments is questioned here. As public librarians are prepared to accommodate learners, one can only presume that many South African teachers do not value or are ignorant about information literacy.

Library material used by public library member respondents are non-fiction (17.0%), magazines (16.8%), reference resources (16.5%) and newspapers (15.3%). An overwhelming majority (37.0%) of the public library users used the library only for photocopying.

The majority of students have not used a card catalogue (91.1%) or an online catalogue (75.6%) either before they arrived on campus or in the six months since they have been on campus. Only one student indicated that she has already used both card and online catalogues many times. A small percentage (4.6%) of students indicated that they will be able to find the items located in the catalogue in the library. When given a specific call or shelf number to find, just 19.1% of the students felt confident in locating it in the library.

Many students will not even try to locate retrieved catalogue items. The reason being that an overwhelming number of hits were retrieved and that students did not see their way open to go through the long list to select a few. Inappropriate search terms and ignorance about refining searches might be the explanation for retrieving irrelevant or no information.

Slightly more than half of the respondents (57.8%) regarded themselves as readers. Reasons given for not being readers are: no access to reading material, not interested in reading and no need realized for reading. This trend correlates with the lack of a reading culture in South Africa.

Most students prefer to read magazines (19.9%) and newspapers (19.8%) while text books were last on the student's priority lists. This findings correlates to the types of material borrowed from public libraries.

The majority (89.1%) of the students registered for the Library Science 121 course regarded information literacy as an essential skill. It might be the reason why they opted to do the course. Thirty nine percent of the control group respondents rated information literacy as of somewhat or not important and can be the reasons why they opted not to enrol for the Library Science 121 course.

After comparing the pre- and post-groups' responses, it is clear that the students after completing the information literacy course realized the value of information literacy.

10. FINDINGS : BASELINE INFORMATION LITERACY COMPETENCE OF UWC ARTS INCOMING STUDENTS

10.1 Introduction

In this chapter the results of the thirty three questions in the second section of the questionnaires testing the baseline information literacy competence of incoming UWC Arts students will be summarised in tables and discussed. The different groups (pre-, post- and control) according to the different years (2003, 2004 and 2005) are given.

In order to determine the level of information literacy skills and proficiencies of incoming Arts students, individual answers to individual questions in the questionnaire will be discussed. The results of both the pre- and post- groups will be given to reflect whether the students who enrolled for the Library Science 121 course, picked up information literacy skills and knowledge. Results of the control groups are given to indicate whether students picked up these skills without formal training and part of other courses. The next chapter will deal with how students as individuals faired.

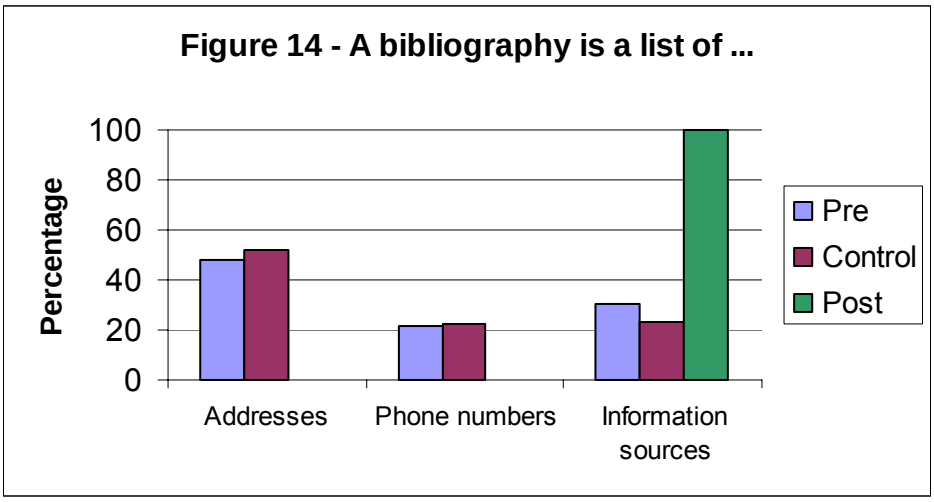
10.2 General library and information skills

10.2.1 Bibliography

For the first question (question 7.1) students were asked to indicate what information (addresses, phone numbers or information sources) they will find when using a bibliography.

Results of the responses of the three groups as a whole are summarized in figure 14. Most students in both the pre- group (47.7%) and control group (51.9%) thought that a bibliography is a list of addresses. The percentage of students regarding a bibliography as a list of telephone

numbers were about similar in the pre- (21.5%) and control (22.1%) groups respectively.



Significant is the fact that all the students in the post-group knew that a bibliography is a list of information sources. The fact that students not only learned about bibliographies in theory, but had hands on experience and had to create a bibliography for their assignments contributed to their knowledge about bibliographies.

Only 23.2% of the control group students supplied the correct answer to what a bibliography is. Five students in the control group did not supply an answer. It can be assumed that these students did not know what a bibliography was. It seems as if Arts students not doing the Library Science 121 course are not introduced to the use of bibliographies and are unfamiliar with the term. Hutcherson (2004: 349) also found that first and second year university students are not familiar with library-specific terms such as bibliography. Detailed responses are reflected in table 32 below:

Table 32 – A bibliography is a list of …

		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Addresses	#	45	40	59	144	0	0	0	0	63	23	8	94
	%	32.3	52.6	65.5	47.7	0.0	0.0	0.0	0.0	53.8	52.3	40.0	51.9
Phone numbers	#	30	17	18	65	0	0	0	0	24	11	5	40
	%	22.1	22.4	20.0	21.5	0.0	0.0	0.0	0.0	20.5	25.0	25.0	22.1
Information sources	#	61	19	13	93	75	83	50	208	27	9	6	42
	%	44.9	25.0	14.4	30.8	100	100	100	100	23.1	20.5	30.0	23.2
No answer	#	0	0	0	0	0	0	0	0	3	1	1	5
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.3	5.0	2.8

10.2.2 Serial publication

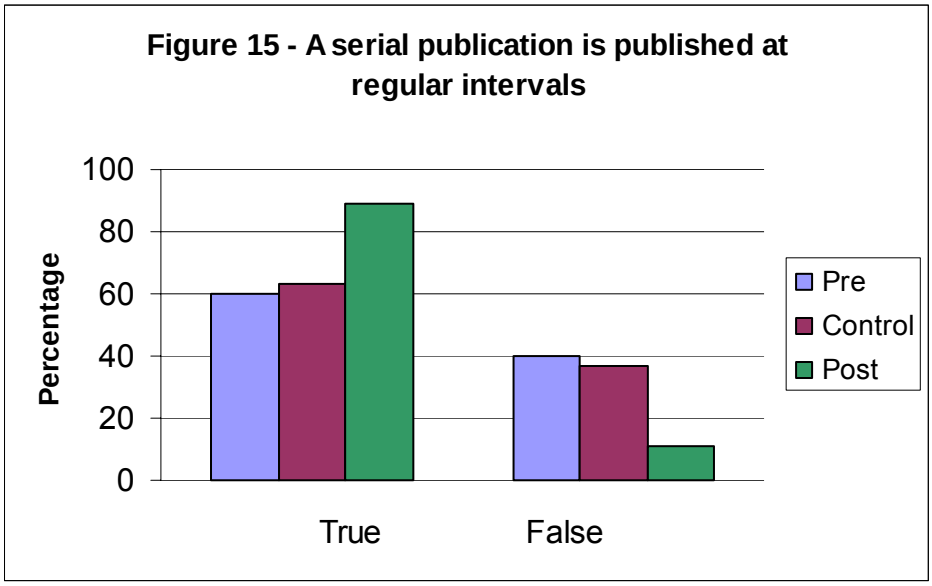
Question 7.2 asked respondents to indicate whether the fact that a serial publication is published on a continuing basis at regular intervals is true or false. Results are recorded in table 33 below:

Table 33 - A serial publication is published at regular intervals

		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
True	#	90	52	39	181	66	75	44	185	74	32	9	115
	%	66.2	68.4	43.3	59.9	88.0	90.4	88.0	88.9	63.3	72.7	45.0	63.5
False	#	46	24	51	121	9	8	6	23	43	12	11	66
	%	33.8	31.6	56.7	40.1	12.0	9.6	12.0	11.1	36.8	27.3	55.0	36.5

As can be seen from the summarized results in figure 15 without formal training 59.9% of the pre-group and 63.5% of the control group knew that a serial publication is published on a continuing basis at regular intervals. The reason why most students knew the correct answer might be because as indicated in table 26 in chapter 9, most students prefer as reading material the more popular, easy to read magazines and newspapers. The fact that 11.1% of the post-group still did not know that a serial publication is published on a regular interval is an indication that students find the principle and use of serial publications difficult.

Figure 15 - A serial publication is published at regular intervals



10.2.3 Most current, recent, up to date information

To evaluate whether students know that the type of information needed will influence the type of source that you need to use, students had to indicate what source they will use to find the most current, recent or up to date information about a certain topic.

Of the five options namely books, journal articles, encyclopaedia articles, almanacs and websites from table 34 and figure 16 it is clear that only 25.2% of the pre-group and 26.5% of the control group has chosen websites as the source with the most up to date information on a topic. In the pre-group most of the students (27.8%) indicated that they will use journal articles for the most recent information. In the control group most students (26.5%) regarded the use of the information sources journal articles and websites as equal in supplying the most up to date information on a topic.

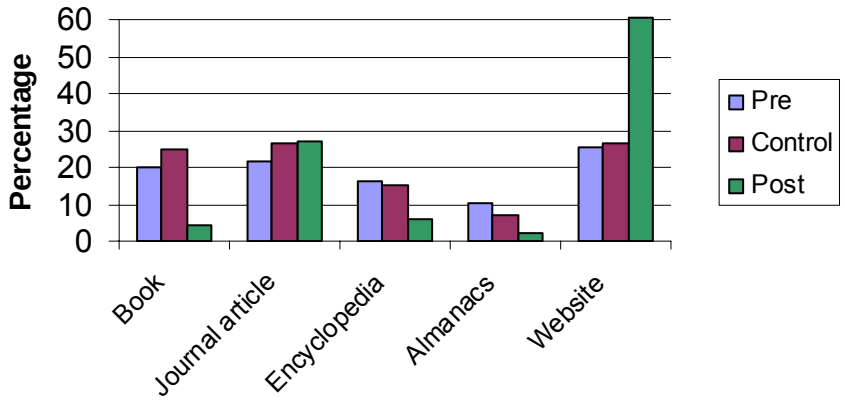
Table 34 - Source of most up to date information

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Book	#	27	12	22	61	6	1	2	9	31	12	2	45
	%	19.9	15.8	24.4	20.2	8.0	1.2	4.0	4.3	26.5	27.3	10.0	24.9
Journal article	#	41	19	24	84	21	16	19	56	34	9	5	48
	%	30.2	25.0	26.7	27.8	28.0	19.3	38.0	26.9	29.1	20.5	25.0	26.5
Encyclopedia	#	23	10	17	50	12	0	0	12	20	5	2	27
	%	16.9	13.2	18.9	16.6	16.0	0.0	0.0	5.8	17.1	11.4	10.0	14.9
Almanacs	#	12	10	9	31	3	2	0	5	8	3	2	13
	%	8.8	13.2	10.0	10.3	4.0	2.4	0.0	2.4	6.8	6.8	10.0	7.2
Websites	#	33	25	18	76	33	64	29	126	24	15	9	48
	%	24.3	32.9	20.0	25.2	44.0	72.1	58.0	60.6	20.5	34.1	45.0	26.5

In both the pre- and control groups the third largest percentages of students (20.2% and 24.9% respectively) regarded books as an information source with the most recent information. It seems as if incoming students do not know the time span involved when a book is published.

The post-group students indicated that they will find the most current information using websites (60.6%) and journal articles (26.9%).

Figure 16 - Source of most up to date information



The low percentages of students in all the groups (10.9%, 2.4% and 7.2% respectively) choosing almanacs as a source of most recent information might be that students are unaware that it contains facts on annual events.

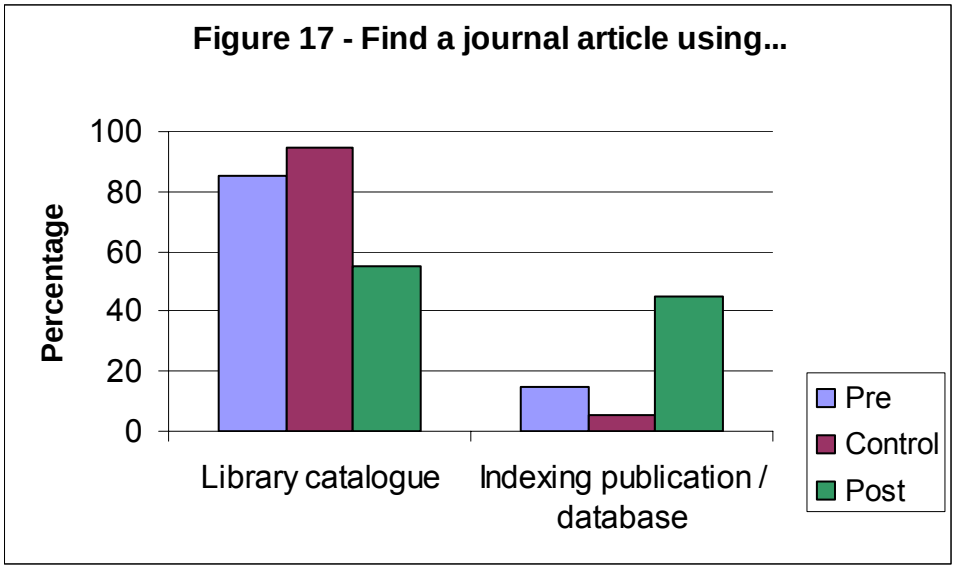
10.2.4 Finding a specific journal article

For question 7.4 of the questionnaire students had to choose between the use of a library catalogue and an indexing publication or database to find a specific journal article with a known author. Detailed results are listed in table 35:

Table 35 - Find a journal article using …

		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Library catalogue	#	103	73	82	258	41	46	28	115	111	41	19	171
	%	75.7	96.1	91.1	85.4	54.7	55.4	56.0	55.3	94.9	93.2	95.0	94.5
Indexing publication or database	#	33	3	8	44	34	37	22	93	6	3	1	10
	%	24.3	3.9	8.9	14.6	45.3	44.6	44.0	44.7	5.1	6.8	5.0	5.5

From the summarized results of the three groups it is clear that an overwhelming majority of students in the pre- (85.4%) and control (94.5%) groups thought that they will find a journal article by doing an author search in the library catalogue. It is an indication that incoming students are not familiar with what sources are catalogued in library catalogues and with the use of indexing publications and databases.



Two tutorials during the Library Science 121 course are used to familiarize students with academic journals and the use of various indexing databases. Students must also find at least one relevant journal article for their academic essay. Still only 44.7% of students in the post-group knew that in order to find a specific journal article with a known author, an indexing publication or database is used.

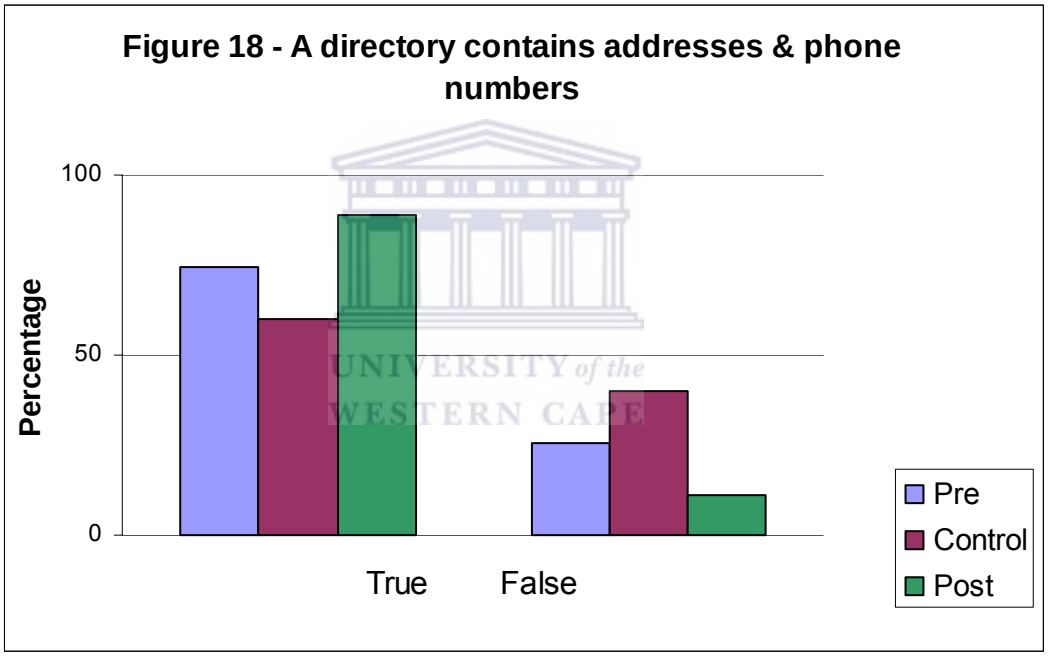
This trend correlates with research done at other tertiary institutions. Students find it difficult to find printed as well as electronic journal articles (Chapman, Pettway & Scheuler, 2002/2003: 364; Knight, 2002: 17, Mitchell & Viles, 2001: 314 and Patterson, 1978: 227). As a result they use primarily books as resources and will not include the latest trends and developments in a discipline (Carlson, 2006: 14 and East, 2005: 138).

10.2.5 Directory

Respondents had to indicate (question 7.5) whether the statement about a directory, namely that it contains addresses and phone numbers, is true or false. Most students in the pre-group (74.2%), but fewer students in the control group (60.2%) knew the statement is true. This indicates that students are familiar with information sources like phone books. Detailed results are recorded in table 36 and reflected in figure 18.

Table 36 – A directory contains addresses & phone numbers													
		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
True	#	103	68	53	224	65	73	47	185	66	30	13	109
	%	75.8	89.5	58.9	74.2	86.7	88.0	94.0	88.9	56.4	68.2	65.0	60.2
False	#	33	8	37	78	10	10	3	23	51	14	7	72
	%	24.3	10.5	41.1	25.8	13.3	12.0	6.0	11.1	43.6	31.8	35.0	39.8

Although 88.9% of the post-group indicate that the statement is true, it is an indication that not all the students had enough exposure to directories and the information it contains. This collates with the findings by Ramakrishnegowda and Walmiki (2004: 367) stating that the majority of students at Kuvempu University lack awareness regarding directories.

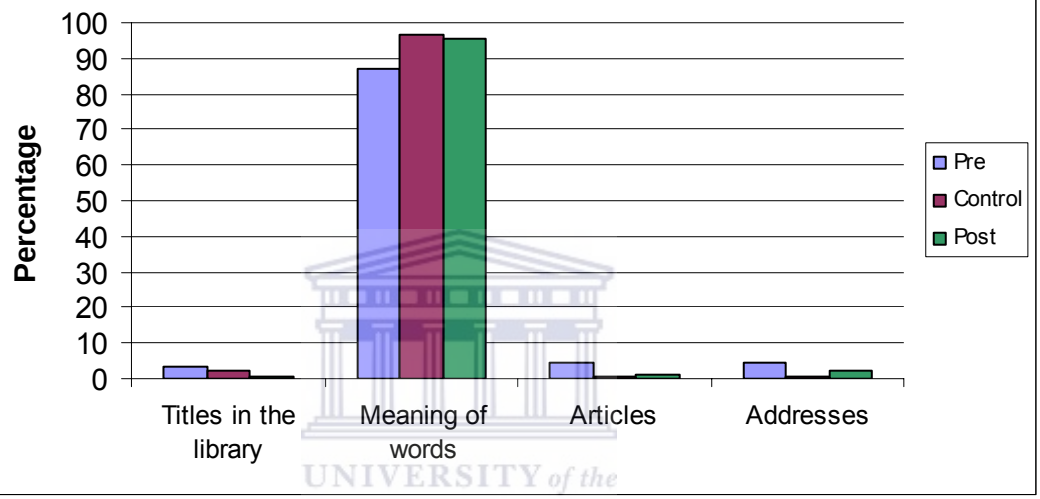


10.2.6 Dictionary

In response to question 7.6 students had to indicate if they will consult a dictionary to find titles in the library, the meaning of words, a journal article or a book on a topic. The detailed and summarized responses are listed in table 37 and figure 19 respectively below:

Table 37 - Consult dictionary to find													
		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Titles in library	#	6	0	5	11	0	1	0	1	3	0	1	4
	%	4.4	0.0	5.6	3.6	0.0	1.3	0.0	0.5	2.6	0.0	5.0	2.2
Meaning of words	#	121	70	72	263	69	81	49	199	112	44	19	175
	%	89.0	92.1	80.0	87.1	92.0	97.6	98.0	95.7	95.7	100	95.0	96.7
Articles	#	6	3	5	14	1	1	1	3	1	0	0	1
	%	4.4	4.0	5.6	4.6	1.3	1.3	2.0	1.4	0.9	0.0	0.0	0.6
Addresses	#	3	3	8	14	5	0	0	5	1	0	0	1
	%	2.2	4.0	8.9	4.6	6.7	0.0	0.0	2.4	0.9	0.0	0.0	0.6

Figure 19 - Consult a dictionary to find



The majority of students in the pre-group (87.1%), control group (96.7%) and post-group (95.6%) knew that a dictionary is consulted to find the meaning of words. Although students need to consult various types of dictionaries during the Library Science 121 course no significant difference between them and the control group was found. Respondents from the control group learned either how to use dictionaries during their school years or picked up the skill during their first university year.

After doing the Library Science 121 course and using the library catalogue, indexing databases and directories, nine students still did not know how these retrieval tools or information source differ from a dictionary.

10.2.7 First task

Respondents were asked in question 7.7 what they will do first after they heard that they must write an academic essay on the topic “the influence of desk top publishing on South African libraries”. The four options given were 1) use a dictionary to find out what desk top publishing mean, 2) interview some local librarians, 3) find a journal article on the topic and 4) find a book on the topic.

Because the topic includes words that are not normally used in daily vocabulary, it was expected from students to indicate that they will consult a dictionary first to ensure that they understand all the words used in the topic. As seen from table 38 and figure 20 most students in the pre-group (37.1%) and the control group (48.1%) did not consider what the topic is about and thought that they will be able to find a book on the topic.

In both the pre-group (33.1%) and the control group (28.2%) the second highest percentages of students opted for interviewing librarians. Subject librarians at the University of the Western Cape Library indicated during interviews that students regularly asked for assistance in searching for information when it is apparent that they do not understand the topic. When doing a topic search, students expect librarians to assist them in deciding which key words or related terms to use.

Figure 20 - First task when doing an assignment

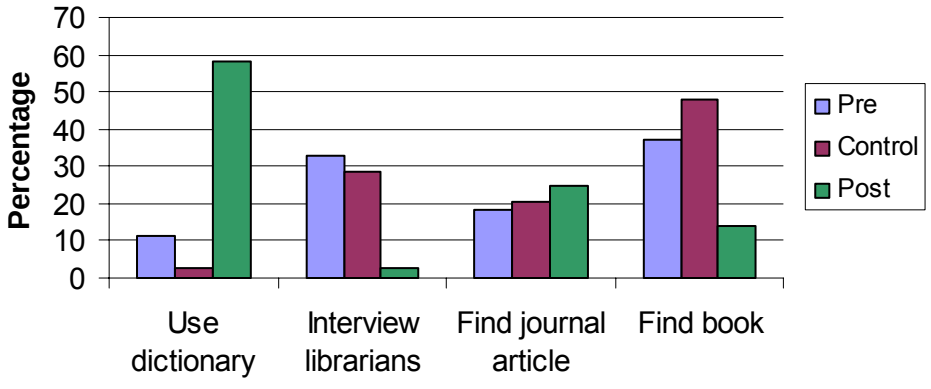


Table 38 - First task when doing an assignment													
		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Use dictionary	#	18	6	10	34	46	46	29	121	4	1	0	2.8
	%	13.2	7.9	11.1	11.3	61.3	55.4	58.0	58.2	3.4	2.3	0.0	27.6
Interview librarians	#	54	24	22	100	5	1	0	6	37	8	7	52
	%	39.7	31.6	24.4	33.1	6.7	2.2	0.0	2.9	31.6	18.2	35.0	28.8
Find journal article	#	26	13	17	56	17	18	17	52	20	10	7	37
	%	19.1	17.1	18.9	18.5	22.7	21.7	34.0	25.0	17.1	22.7	35.0	20.4
Find book on topic	#	38	33	41	112	7	18	4	29	56	25	6	87
	%	28.0	43.4	45.6	37.1	9.3	21.7	8.0	13.9	47.9	56.8	30.0	48.1

Of the pre-group only 11.3% and of the control group 2.8% of the students indicate that they will consult a dictionary first. At the end of the Library Science 121 course the percentage of students who indicated that they will consult a dictionary first was still low at 58.2%.

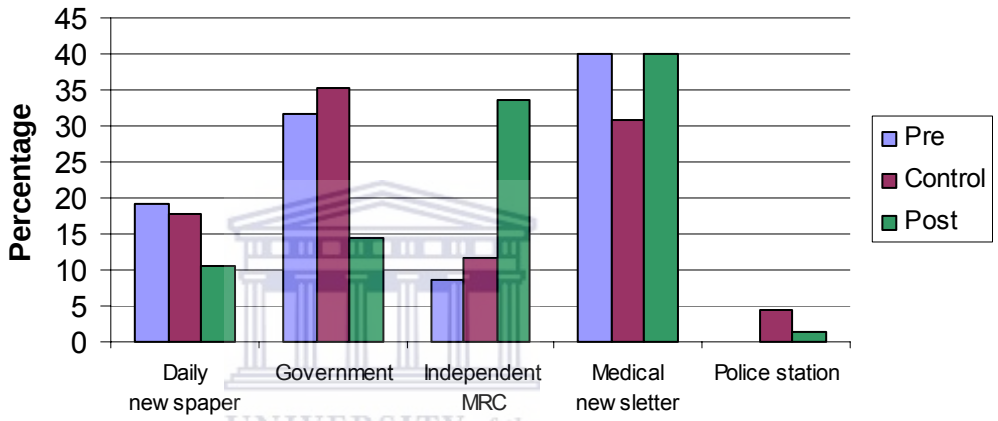
10.2.8 Most current and reliable statistics

To test whether students know where to look for up to date as well as authoritative information, they were asked (question 7.8) to indicate which source they will use to find most current and reliable statistics on HIV/AIDS. The options were 1) a daily newspaper, 2) a governmental publication or website, 3) an independent Medical Research Council Report or website, 4) a medical newsletter of website or 5) a police station. Detailed responses are reflected in table 39:

Table 39 - Most current & reliable statistics on HIV/Aids in													
		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Daily newspaper	#	37	13	8	58	12	9	1	22	21	8	3	32
	%	27.2	17.1	8.9	19.2	16.0	10.8	2.0	10.6	18.0	18.2	15.0	17.7
Government	#	40	22	34	96	10	13	7	30	41	14	9	64
	%	29.4	29.0	39.8	31.8	13.3	15.7	14.0	14.4	35.0	31.8	45.0	35.4
Independent MRC	#	18	5	3	26	22	25	23	70	16	3	2	21
	%	13.2	6.6	3.3	8.6	29.3	30.1	46.0	33.7	13.7	6.8	10.0	11.6
Medical newsletter	#	41	36	44	121	30	35	18	83	35	15	6	56
	%	30.2	47.4	48.9	40.1	40.0	42.2	36.0	39.9	29.9	34.1	30.0	30.9
Police station	#	0	0	1	1	1	1	1	3	4	4	0	8
	%	0.0	0.0	1.1	0.1	1.3	1.2	2.0	1.4	3.4	9.1	0.0	4.4

From figure 21 it can be seen that students in the pre-group thought that a medical newsletter or website (40.1%), a governmental publication or web site (31.8%) or a daily newspaper (19.2%) will be the most reliable and current source on HIV/AIDS statistics. Students in the control group regarded in order of priority a governmental publication or website (35.4%), medical newsletter or website (30.9%), a daily newspaper (17.7%) and an independent medical research council publication or website as the best source.

Figure 21 - Most current & reliable statistics on HIV/AIDS



Because the government is not objective and uninvolved in the HIV/AIDS issue in South Africa, it was expected that students will know that in order to get the most reliable and authoritative statistics an independent medical research organization will be the best source. Even at the end of the information literacy course where the importance of the evaluation of information and information sources are emphasised, only 33.3% of the students have chosen the correct option.

The same trend was identified by other studies at tertiary institutions. Lack of critical thinking skills result in students accepting information without any form of assessing its validity or discriminating between good or bad information (Albrecht, 2001: 27; Ferguson, Neely & Sullivan, 2006: 61 – 71 and Hearn, 2005 : 219).

10.2.9 Current ongoing information

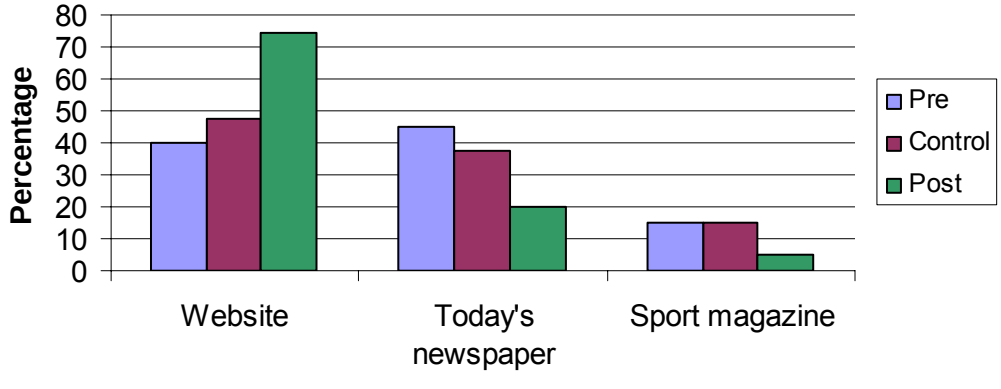
This particular question (7.9) was included in the questionnaire to test whether respondents knew where to find information that is for the moment pertinent. Students had to indicate whether they will consult the South African Cricket Board's website, that day's Cape Times or that month's South African Sports Illustrated magazine to find the cricket score of a game still in progress. Results of all three groups over the three years are listed in table 40.

Table 40 - Latest cricket score

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Website	#	53	27	40	120	53	65	37	155	53	28	5	86
	%	39.0	35.5	44.4	39.7	70.7	78.3	74.0	74.5	45.3	63.4	25.0	47.5
Today's newspaper	#	57	39	40	136	15	15	12	42	45	11	12	68
	%	41.9	51.3	44.4	45.1	20.0	18.1	24.0	20.2	38.5	25.0	60.6	37.6
Sport magazine	#	26	10	10	46	7	3	1	11	19	5	3	27
	%	19.1	13.2	11.1	15.2	9.3	3.6	2.0	5.3	16.2	11.4	15.0	14.9

It was expected that students will be familiar with radio and television broadcasting and that they will relate these kind of information to an appropriate information source. From the summarized result in figure 22 it can be seen that only 39.7% and 47.5% of the pre- and control group respectively identified the South African Cricket Board's website as the source where they will find the ongoing score of a match in progress.

Figure 22 - Latest cricket score



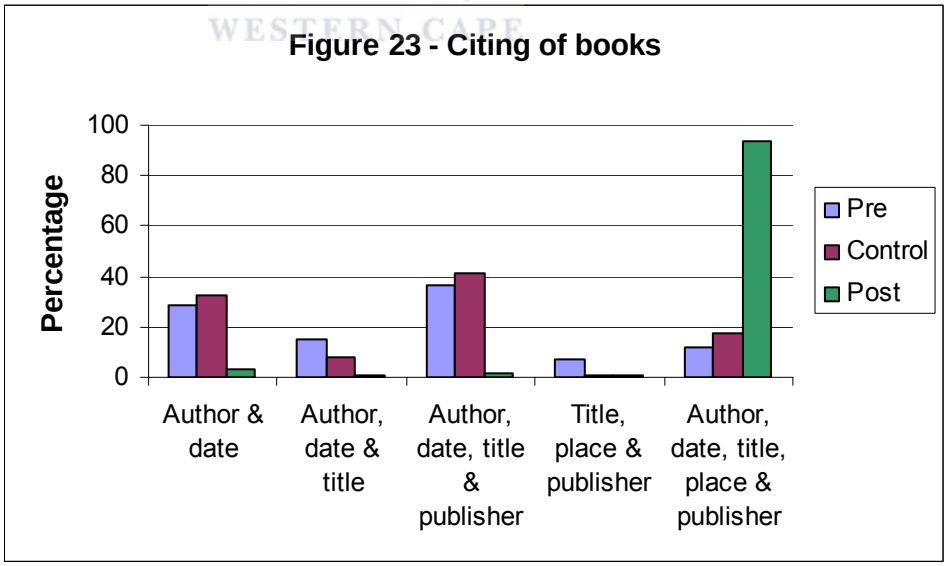
Although today's newspaper will contain yesterday's score and not the ongoing score, it was chosen by 45.1% by students in the pre-group and 37.6% in the control group. About the same percentage (15.2% and 14.9%) of students in the pre- and control group respectively thought that the latest issue of the magazine South African Sports Illustrated will contain the score of a game being played on that day.

At the end of the Library Science 121 course (post-group) most students (74.5%) knew to consult a website to get information that is on the moment pertinent.

10.2.10 Bibliography and citing of books

Respondents were requested to choose one of the options (question 7.10) provided that reflects the information about books consulted for and listed in the bibliography of an academic essay. The options were author & date; author, date & title; author, date, title & publisher; title, place of publication & publisher or author, date, title, place of publication and publisher. Results are summarized in table 41 and figure 23 below.

Figure 23 - Citing of books



In both the pre- and control groups the most students (36.4% and 40.9% respectively) have chosen the option of author, date, title & publisher. Quite a few students (28.8% in the pre- and 32.6% in the control group) thought that supplying just the author and date is good enough.

Table 41 - Citing of books													
		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Author & date	#	36	22	29	87	3	1	3	7	39	13	7	59
	%	26.5	29.1	32.2	28.8	4.0	1.2	6.0	3.4	33.3	29.6	35.0	32.6
Author, date & title	#	13	9	24	46	1	0	0	1	9	4	1	14
	%	9.6	11.8	26.7	15.2	1.3	0.0	0.0	0.5	7.7	9.1	5.0	7.7
Author, date, title & publisher	#	54	34	22	110	4	0	0	4	48	18	8	74
	%	39.7	44.7	24.4	36.4	5.3	0.0	0.0	1.9	41.0	40.9	40.0	40.9
Title, place & publisher	#	9	4	9	22	1	0	0	1	1	1	0	2
	%	6.6	5.3	10.0	7.3	1.3	0.0	0.0	0.5	0.5	2.3	0.0	1.1
Author, date, title, place & publisher	#	24	7	6	37	66	82	47	195	20	8	4	32
	%	17.7	9.2	6.7	12.3	88.0	98.8	94.0	93.8	17.1	18.2	20.0	17.7

Although most lecturers offering first year courses in both the first and second semester indicate in their course descriptors that they use academic essays or assignments as an assessment method, it is clear that students are not given enough guidelines about referencing techniques or students do not regard it as an important aspect of their academic work. Most students (93.8%) of the post-group knew what information should be part of a correct reference.

Findings by researchers like Cameron (2004: 213), Ferguson, Neely and Sullivan (2006: 61-71) and Fitzgerald (2004: 20) indicate that students in general find it difficult to reference and cite sources used and to compile a bibliography.

10.2.11 Plagiarism

Plagiarism is an international contemporary issue in schools and tertiary education. Question 7.11 stated six scenarios reflecting plagiarism. The scenarios were 1) using phrases and sentences without acknowledging the author or source, 2) using ideas of others as if they are your own, 3) copying text written by somebody else without using quotation marks and acknowledging the author or source, 4) rewording someone's information and using it without giving credit to the author and 5) using copyrighted images for the WWW without acknowledging the creator.

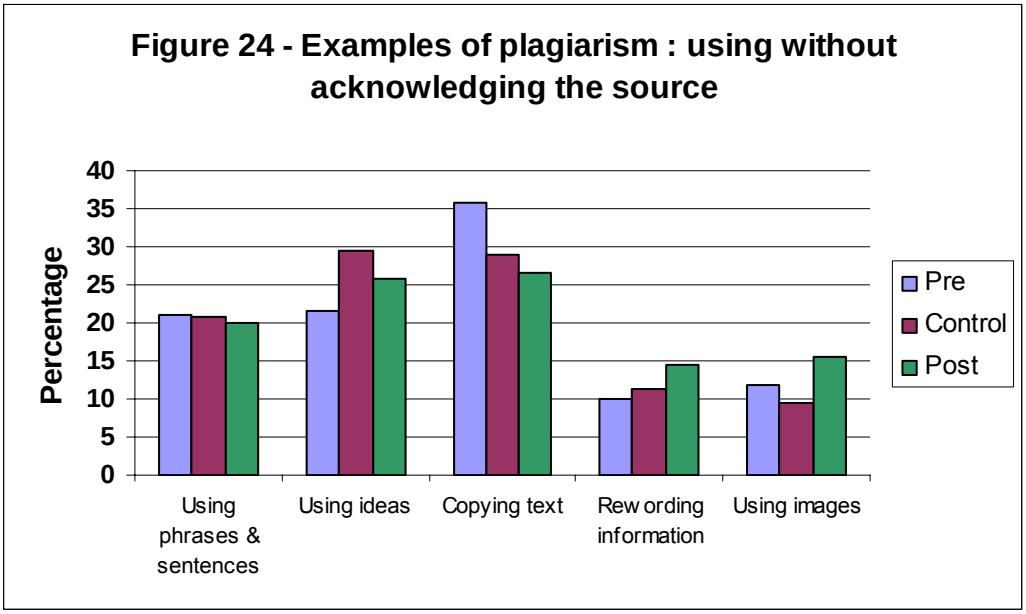
To determine what students regard as plagiarism, respondents had to indicate which of the listed scenarios they regard as plagiarism. Detailed results are recorded in table 42.

Table 42 - Examples of plagiarism : Using without acknowledging the source

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		164	85	123	372	117	214	114	445	169	59	27	255
Phrases & sentences	#	38	16	24	78	23	41	23	87	35	11	7	53
	%	23.2	18.8	19.5	21.0	21.5	19.2	20.2	20.0	20.7	18.6	25.9	20.8
Using ideas	#	36	17	27	80	29	48	35	112	46	20	9	75
	%	22.0	20.0	22.0	21.5	27.1	22.4	30.7	25.8	27.2	33.9	33.3	29.4
Copying text	#	56	38	39	133	40	49	27	116	49	15	10	74
	%	34.2	44.7	31.7	35.8	37.4	22.9	23.7	26.7	29.0	25.4	17.0	29.0
Rewording information	#	19	2	16	37	10	40	13	63	22	7	0	29
	%	11.6	2.4	13.0	10.0	9.4	18.7	11.4	14.5	13.0	11.9	0.0	11.4
Images	#	15	12	17	44	15	36	16	67	17	6	1	24
	%	9.2	14.1	13.8	11.8	14.0	16.8	14.0	15.4	10.1	10.2	3.7	9.4

Although the instruction for question 7.11 was that respondents must tick all that is relevant, most students have chosen only one scenario – therefore indicating that they regard the other scenarios not as plagiarism. As all four scenarios were forms of plagiarism, the ignorance about it might be an explanation for the internationally high occurrence of plagiarism at tertiary institutions (Arnold & Jayne, 1998: 46 – 47 and Lampert, 2004: 354).

Figure 24 - Examples of plagiarism : using without acknowledging the source



From figure 24 it can be seen that the frequency of scenarios chosen varied from 9.4% (copying of images) to 35.8% (copying of text). No scenario was chosen as an overwhelming majority – even by students who completed the Library Science 121 course. More emphasis on the danger and prevention of plagiarism should be part of the course in future.

10.3 Library catalogue skills

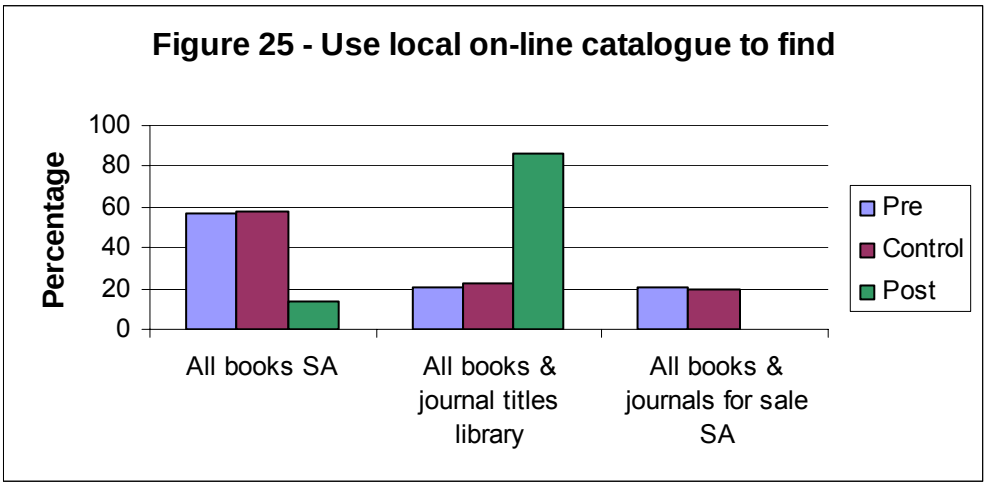
10.3.1 Usage local on-line catalogue

The first question in the catalogue use skills section intended to test whether students know what information sources the on-line catalogue as a retrieval tool can retrieve. Respondents were asked to indicate what information sources the local on-line catalogue of the University of the Western Cape Library will retrieve. They had to choose one option (question 8.1) from either all books published in South Africa, all books and journal titles owned by the library and all the books and journals for sale in South Africa. Detailed results were as follows:

Table 43 - Use local on-line catalogue to find

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
All books SA	#	83	32	57	172	17	10	2	29	67	29	8	104
	%	61.0	42.1	63.3	57.0	22.7	12.1	4.0	13.9	57.3	65.9	40.0	57.5
All books & journal title in library	#	28	20	15	63	58	73	48	179	23	11	7	41
	%	20.6	26.3	16.7	20.9	77.3	88.0	96.0	86.1	19.7	25.0	35.0	22.7
All books & journal for sale in SA	#	22	22	18	62	0	0	0	0	27	4	5	36
	%	16.2	29.0	20.0	20.5	0.0	0.0	0.0	0.0	23.1	9.1	25.0	19.9
No answer	#	3	2	0	5	0	0	0	0	0	0	0	0
	%	2.2	2.6	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

From the summarized results in figure 25 it is clear that the majority of students in both the pre- (57.0%) and control group (57.5%) were of the opinion that the local on-line catalogue of the UWC will retrieve all books published in South Africa.



Only 20.9% of the pre- and 22.7% of the control group knew that a local on-line catalogue will retrieve the books and journal titles owned by the library. About the same percentage of the pre-group (20.5%) and the control group (19.9%) students thought that the local on-line catalogue will supply access to all the books and journals for sale in South Africa. Students might have confused an on-line library catalogue with an on-line book seller like Amazon or Kalahari or other database. This correlates with the trend found by Massey-Burzio (1998: 208) that students don't know the difference between on-line catalogues and databases. Five students in the pre-group did not answer – indicating that they did not know the answer.

In the post-group, after completing the Arts Information Literacy course (Library Science 121), 88.9% of the students reflected the knowledge that the on-line catalogue of the University of the Western Cape library will only reflect the holdings of the library.

10.3.2 Truncation

Although the question (8.2) on truncation was included in the library catalogue section, it is a skill also used when using search engines or searching databases. Students had to indicate which truncated keyword will retrieve all of the terms theatre, theater, theatres, theatrics and

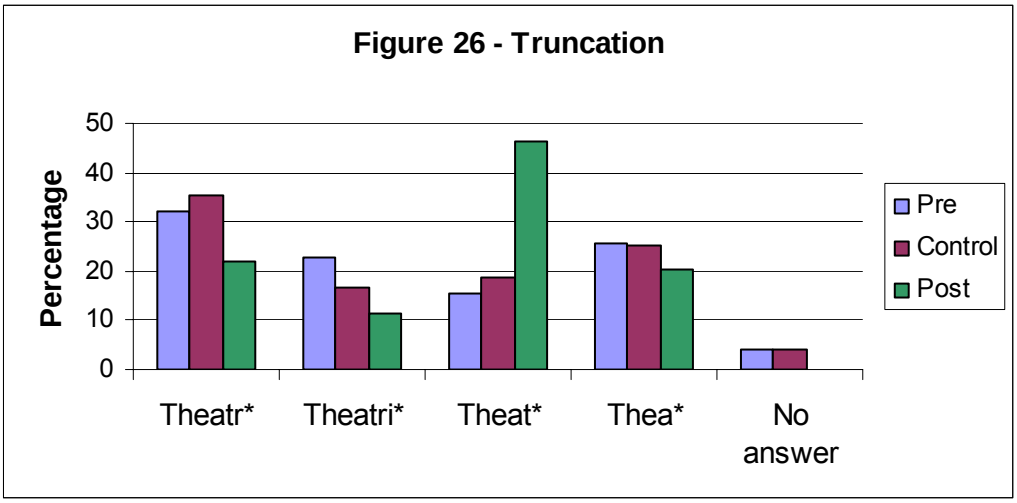
theatrical. The options to choose from were theatr*, theatri*, theat* or thea*. Responses are recorded in table 44:

Table 44 – Truncation

		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Theatr*	#	30	28	39	97	19	18	9	46	44	14	6	64
	%	22.1	36.9	43.3	32.1	25.3	21.7	18.0	22.1	37.6	31.8	30.0	35.4
Theatri*	#	33	20	16	69	7	9	8	24	22	4	4	30
	%	24.3	26.3	17.8	22.9	9.3	10.8	16.0	11.5	18.8	9.1	20.0	16.6
Theat*	#	28	8	11	47	30	41	25	96	22	5	7	34
	%	20.6	10.5	12.2	15.6	40.0	49.4	50.0	46.2	18.8	11.4	35.0	18.8
Thea*	#	36	20	21	77	19	15	8	42	29	15	2	46
	%	26.5	26.3	23.3	25.5	25.3	18.1	16.0	20.2	24.8	34.1	10.0	25.4
No answer	#	9	0	3	12	0	0	0	0	0	6	1	7
	%	6.6	0.0	3.3	4.0	0.0	0.0	0.0	0.0	0.0	13.6	5.0	3.9

Although only the truncated keyword “theat*” will retrieve all the listed terms, only 15.6 % of the pre-group and 18.8% of the control group have chosen it. In both groups the truncated keyword “theatre” drew the highest percentages (21.1% and 35.4% respectively). In both groups some students (4.0% and 3.9% respectively) did not answer. This is an indication that they are not familiar with the concept of truncation. The same trend was found by Hutcherson (2004: 349). Although “theat*” drew the highest percentage (46.2%) of the post-group, it seemed as if students were not that confident in understanding and using truncation. Findings are summarized in figure 26:

Figure 26 - Truncation



10.3.3 Library catalogue record

An example of a catalogue record found in the on-line catalogue of the library of the University of the Western Cape was reproduced on the questionnaire. Respondents had to indicate what type of information source it is, when the item was published, in which city it was published, what number they will use to find the item on the shelf and what key words they will use of find similar items on the same topic in the library.

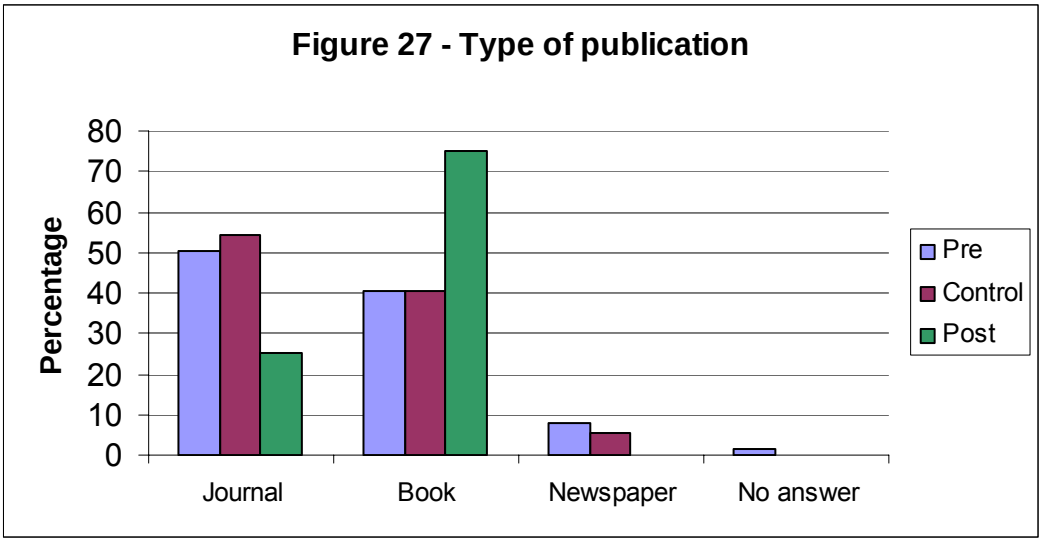
10.3.3.1 Type of publication

Respondents were instructed (question 8.3.1) to look at the catalogue record and choose from the options a journal, book or newspaper what type of publication was represented in the catalogue record. From table 45 it is clear that in both the pre- (50.3%) and control (54.1%) groups most students regarded the catalogue item as a journal. A small percentage of students in these groups (8.0% and 5.5% respectively) regarded the item as a newspaper. Coupe (1993: 198) as well as Mitchell and Viles (2001: 311 – 315) found that distinguishing between citations of different types of library materials is problematic for students.

Table 45 - Type of publication

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Journal	#	74	32	46	152	31	11	10	52	62	20	16	98
	%	54.4	42.1	51.1	50.3	41.3	13.3	20.0	25.0	53.0	45.5	80.0	54.1
Book	#	45	37	40	122	44	72	40	156	47	22	4	73
	%	33.1	48.7	44.4	40.4	58.7	86.8	80.0	75.0	40.2	50.0	20.0	40.3
Newspaper	#	13	7	4	24	0	0	0	0	8	2	0	10
	%	9.6	9.2	4.4	8.0	0.0	0.0	0.0	0.0	7.7	4.6	0.0	5.5
No answer	#	4	0	0	4	0	0	0	0	0	0	0	0
	%	2.9	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Although not one of the students in the post-group regarded the reproduced item as a newspaper, 25.0% of the students still confused the record of a book with a record of a journal. It seems as if Library Science 121 students are not familiar enough with the format of catalogue records. Findings are summarized in figure 27:



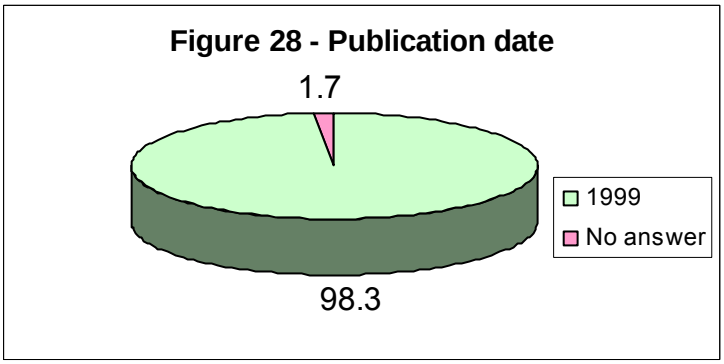
10.3.3.2 Publication date

Because currency is an important criterion for the evaluation of information and information sources, students were challenged (question 8.3.2) to demonstrate that they know the publication date of an item in the reproduced catalogue record. Responses are recorded in table 46.

Table 46 - Publication date

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
1999	#	135	76	88	299	75	83	50	208	116	42	70	178
	%	99.3	100	97.8	99.0	100	100	100	100	99.2	95.5	100	98.3
No answer	#	1	0	2	3	0	0	0	0	1	2	0	3
	%	0.7	0.0	2.2	1.0	0.0	0.0	0.0	0.0	0.9	4.5	0.0	1.7

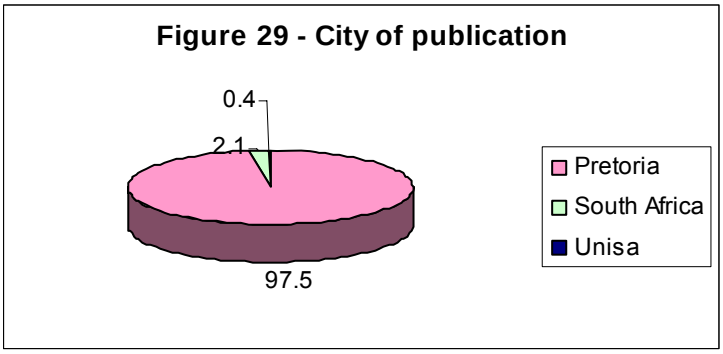
Except for 3 students in both the pre- and control group, the rest of all the students had the publication date correct.



10.3.3.3 Place of publication

To evaluate if students knew that bibliographic information about the publication is found next to the description *imprint* on the catalogue record, they had to write down for question 8.3.3 the city where the item was published.

Figure 29 - City of publication



The overwhelming majority of all the groups indicated that the document was published in Pretoria. Although the question stated that the city of publication must be indicated, 11 students from the pre-group, 1 from the control group and 2 of the post-group gave the country South Africa as the answer. Three students in the pre-group regarded Unisa (University of South Africa) as the city. Detailed responses are recorded in table 47.

Table 47 - City of publication

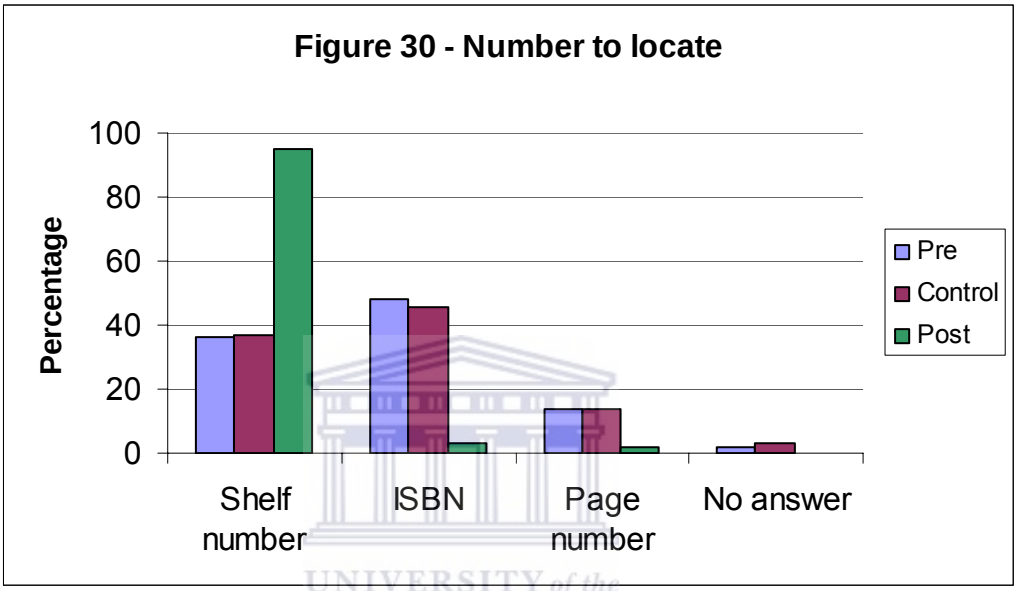
		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Pretoria	#	132	70	86	288	74	83	49	206	116	44	20	180
	%	97.1	92.1	95.6	95.4	98.7	100	98.0	99.0	99.2	100	100	99.5
South	#	3	6	2	11	1	0	1	2	1	0	0	1
Africa	%	2.2	7.9	2.3	3.6	1.2	0.0	2.0	1.0	0.9	0.0	0.0	0.5
Unisa	#	1	0	2	3	0	0	0	0	0	0	0	0
	%	0.7	0.0	2.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

10.3.3.4 Number to locate

To determine if students knew where to find the call or shelf number on the catalogue record, respondents had to write down (question 8.3.4) the number they will use to find the item in the library. Responses are listed in table 48 and summarized in figure 30.

Table 48 - Number to locate													
		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Shelf number	#	55	27	28	110	70	79	49	198	39	19	9	67
	%	40.4	35.5	31.1	36.4	93.3	95.2	98.0	95.2	33.3	43.2	45.0	37.0
ISBN	#	68	37	41	146	4	1	1	6	52	21	10	83
	%	50.0	48.7	45.6	48.3	5.3	1.2	2.0	2.9	44.4	47.7	50.0	45.9
Page number	#	13	12	16	41	1	3	0	4	22	3	0	25
	%	9.6	15.8	17.8	13.6	1.3	3.6	0.0	1.9	18.8	6.8	0.0	13.8
No answer	#	0	0	5	5	0	0	0	0	4	1	1	6
	%	0.0	0.0	5.6	1.7	0.0	0.0	0.0	0.0	3.4	2.3	5.0	3.3

Figure 30 - Number to locate



In both the pre- and control groups the numbers used to locate the item in the library were firstly the ISBN (48.3% and 45.9% respectively), secondly the shelf number (36.4% and 37.0% respectively) and thirdly the page number (13.6% and 13.8% respectively). Eleven students from these groups did not answer – indicating that they do not know which number to use to locate the item on the shelf. This correlates with findings by Coupe (1993: 198) indicating that students at John Hopkins University find it difficult to identify a call number.

These results coincide with the responses recorded in of table 27 in the previous chapter, where the minority (8.0%) of the students in the pre-group felt that they will always be able to use the catalogue record to locate items in the library. Only 18.2% of the pre-group felt confident that when given a call or shelf number they will always be able to find it in the

library. Just 2.7% of the pre-group indicated that they are confident that they will always locate items they are looking for.

Part of the Library Science 121 course is hands-on training in the use of the on-line library catalogue, to interpret the catalogue record and how to use the call or shelf number to find the book on the shelf. The majority of students in the post-group (95.2%) therefore knew that they must use the call or shelf number and not the ISBN to find the book in the library.

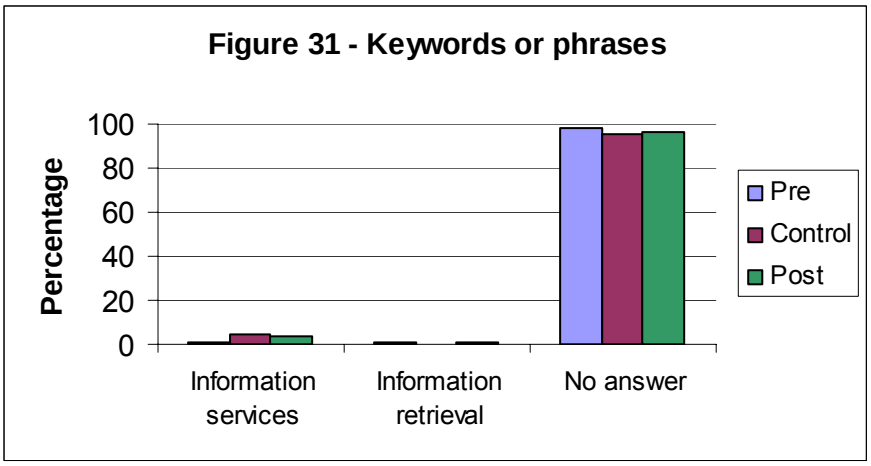
10.3.3.5 Key words or phrases

For the last question (8.3.5) in this section respondents were asked to supply other key words or phrases they would use when they are looking for more items on the same topic. Although two subject headings, namely *Information services – South Africa* and *Information retrieval* are recorded on the catalogue record, students did not know that they can use those terms or phrases to find additional items on the same topic.

Table 49 - Keywords or phrases

		Group											
		Pre 302				Post 208				Control 181			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Information services	#	1	0	2	3	2	3	2	7	4	4	0	8
	%	0.7	0.0	2.2	1.0	2.7	3.6	4.0	3.4	3.4	9.1	0.0	4.4
Information retrieval	#	0	0	2	2	0	0	1	1	0	0	0	0
	%	0.0	0.0	2.2	0.7	0.0	0.0	2.0	0.5	0.0	0.0	0.0	0.0
No answer	#	135	76	86	297	73	80	47	200	113	40	20	173
	%	99.3	100	95.6	98.3	97.3	96.4	94.0	96.2	96.6	90.9	100	95.6

From table 49 and figure 31 it is clear that only 1.0%, 3.4% and 4.4% of the pre-, post- and control group respectively will use the term *Information services* for additional books on information skills. Even fewer students 0.7%, 0.5% and 0.0% knew that the key words *Information retrieval* will also retrieve books with a similar topic. The high percentages of students who did not answer in all three groups (98.3%, 96.2% and 95.6% respectively) is a confirmation that students did not understand the purpose of recording the subject of the book on the catalogue record.



This trend correlates with findings such as Kunkel, Weaver and Cook (1996: 432), Ramakrishnegowda and Walmiki (2004: 367), Rockman (2002: 195) and Zondi (1992: 205) which indicate that students do not understand controlled vocabulary, how to do a subject heading search or how to choose subject headings from given lists.

10.4 Indexes

10.4.1 Usage indexes

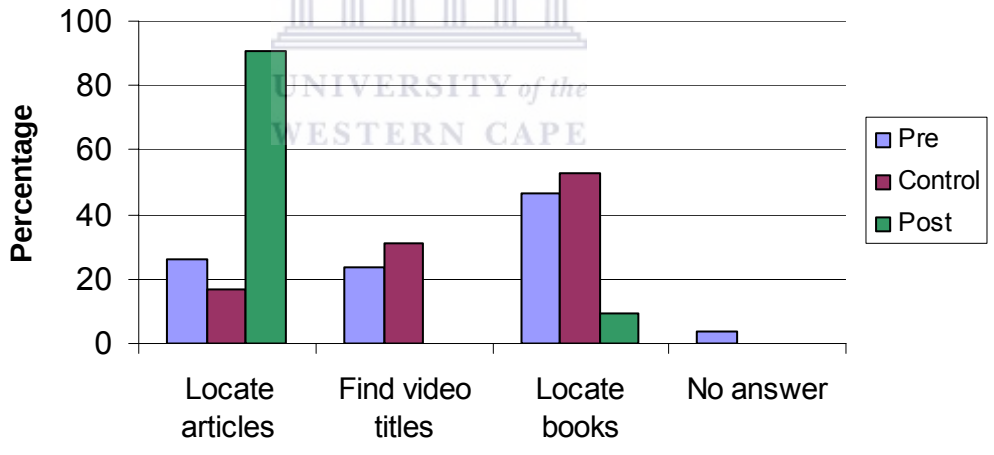
Although a question (7.4) on how students will find a journal article was already asked and discussed in paragraph 10.2.4, as a control measure, another question (9.1) was asked on indexes. Respondents had to indicate for what purpose they would use a periodical index or abstract. Except for the correct option, namely to locate journal articles, two other incorrect options, namely to find video titles and to look for books were provided. Responses are listed in table 50.

From the table it can be deduced that only a quarter (25.8%) of the pre-group students knew that a periodical index was used to locate journal articles. Most of the students (46.7%) thought that they can find books with this retrieval tool. Seventy two students (23.8%) indicated that they will use a periodical index to find video titles.

Table 50 – Use of indexes or indexing database													
		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Locate articles	#	39	15	24	78	59	80	49	188	18	6	6	30
	%	28.7	19.7	26.7	25.8	78.7	96.4	98.0	90.4	15.4	13.6	30.0	16.6
Find video titles	#	30	15	27	72	0	0	0	0	37	13	6	56
	%	22.1	19.7	30.0	23.8	0.0	0.0	0.0	0.0	31.6	29.6	30.0	30.9
Locate books	#	59	43	39	141	16	3	1	20	62	25	8	95
	%	43.4	56.6	43.3	46.7	21.3	3.6	2.0	9.6	53.0	56.8	40.0	52.5
No answer	#	8	3	0	11	0	0	0	0	0	0	0	0
	%	5.9	4.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The same pattern is seen with the control group. Most students (52.5%) thought they will be able to find books using an index or abstract. A large percentage of respondents (30.9%) would try to use an index as a retrieval tool to retrieve videos. Only 16.6% of the control group knew at the end of their first year of studying at the University of the Western Cape that a periodical index or abstract is used to locate journal articles.

Figure 32 - Use of index or indexing database



These results correlate with the responses to question 7.4 where students had to indicate what retrieval tool they will use to find a journal article. Most students indicated that they will use the library catalogue and not an indexing publication or database. It also correlates with the international trend that students find it difficult to find journal articles using indexes (Burton & Chadwick, 2000: 321; Cameron, 2004: 213; Gutierrez & Wang, 2001: 208 and Knight, 2002: 17). The majority (90.4%) of the students

who completed the Library Science 121 course have chosen the correct answer to the question. Only 9.6% of the post-group students still thought that they will be able to locate books using an index or abstract as retrieval tool.

10.4.2 Components journal article reference

To test whether students know how to cite a journal article, a correct bibliographic reference of a journal article was given. Students had to identify the numbered parts of the citation by encircling the correct number next to the various parts of the citation. Detailed results are given in table 51:

Table 51 - Components journal article reference

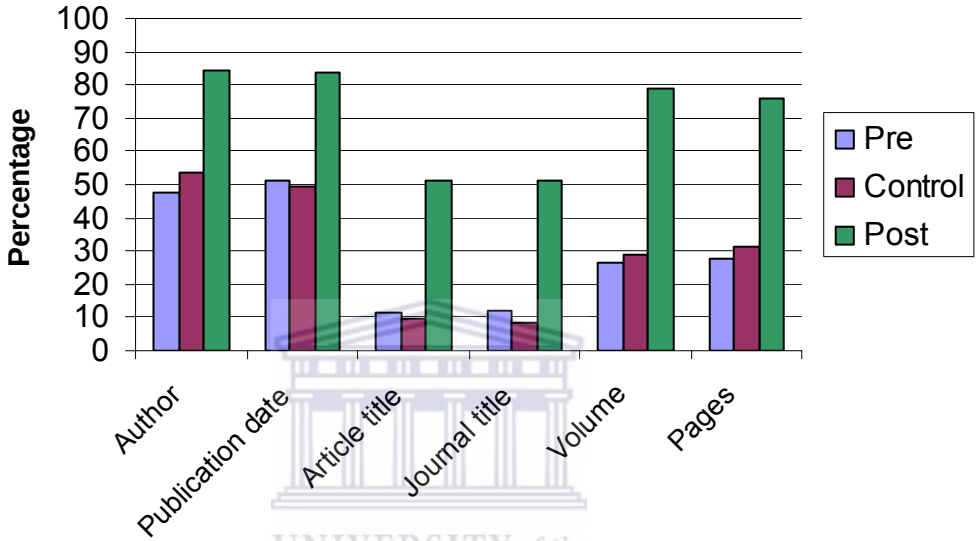
		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Author	#	48	38	57	143	56	72	47	175	63	25	9	97
	%	35.5	50.0	63.3	47.4	74.7	86.8	94.0	84.1	53.9	56.8	45.0	53.6
Publication date	#	53	40	62	155	54	71	49	174	55	25	9	89
	%	39.0	52.6	68.9	51.3	72.0	85.5	98.0	83.7	47.0	56.8	45.0	49.2
Article title	#	18	4	12	34	30	46	31	107	15	2	0	17
	%	13.2	5.3	13.3	11.3	40.0	55.4	62.0	51.4	12.8	4.6	0.0	9.4
Journal title	#	23	2	11	36	30	45	31	106	12	3	0	15
	%	16.9	2.6	12.2	11.9	40.0	54.2	62.0	51.0	10.3	6.8	0.0	8.3
Volume	#	30	19	32	81	50	69	45	164	33	14	5	52
	%	2.2	25.0	35.6	26.8	66.7	83.1	90.0	78.9	28.2	31.8	25.0	28.7
Pages	#	34	20	30	84	43	70	45	158	38	14	5	57
	%	25.0	26.3	33.3	27.8	57.3	84.3	90.0	76.0	32.5	31.8	25.0	31.5
No answer	#	73	34	21	128	14	8	0	22	42	15	11	68
	%	53.7	44.7	23.3	42.4	18.7	9.6	0.0	10.6	36.0	34.1	55.0	37.6
All 6 correct	#	14	2	5	21	29	43	31	103	9	2	0	11
	%	10.3	2.6	5.6	7.0	38.7	51.8	62.0	49.5	7.7	4.6	0.0	6.1

From figure 33 it can be derived that about half of the students of the pre-group (47.6% and 51.3% respectively) as well as part of the control group (53.6% and 49.2% respectively) were able to identify the author and the publication date in the citation. For the rest of the citation parts, students in both groups fared poorly.

The percentages of students in the pre- and control groups respectively that identified the remaining parts correctly were: article title 13.3% and

9.4%; journal title 11.9% and 8.3%; volume 26.8% and 28.7% and pages 27.8% and 31.5%. The high percentage of students in both groups who did not supply answers (42.4% and 37.6% respectively) is a further indication that students are unfamiliar with journal articles as an information source and how to supply a bibliographic reference if they used it.

Figure 33 - Components journal article reference



Research done by Cameron (2004: 234), Chapman, Pettway and Scheuler (2002/2003: 364) as well as Massey-Burzio (1998 : 211) also demonstrated that identifying journal articles on a particular subject and how to find out if the library has a journal title were weak points in the information literacy level of university students.

Because the correct bibliographic reference format is discussed and more than one tutorial gave attention to the use and citing journal articles during the Library Science 121 course, students in the post-group fared better in identifying parts of a journal article citation. Eighty four percent were able to identify the author correctly; 83.7% the publication date; 51.4% the article title; 51.0% the journal title; 78.9% the volume and 76.0% the pages. It seems as if students still struggled to differentiate between the

article and journal title. The still relatively high percentage (10.6%) of post-group students who did not supply answers is an indication that some students still do not understand a journal article citation. An additional tutorial or exercise on this should be included in the Library Science 121 course.

10.4.3 Electronic full text journal article

Question 9.3 in the questionnaire requested students to indicate what database they would use to find a full text article if they knew that it is electronically available via the UWC library. All the journals that are received electronically by the UWC library are listed in the database "electronic journals". Responses are recorded in table 52.

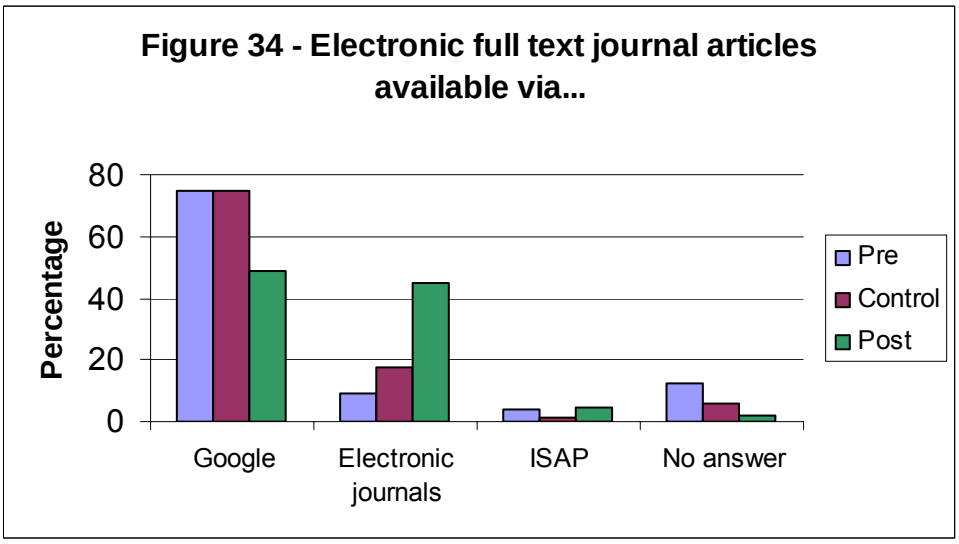
As expected the students in the pre- and control groups were not familiar with the database ISAP (Index to South African periodicals). Only a few students in the pre- (4%) and the control (1.1%) thought that ISAP will supply full text journal articles.

Table 52 - Electronic full text journal articles available via…

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Google	#	104	65	56	225	34	51	16	101	95	31	10	136
	%	76.5	85.5	62.2	74.5	45.3	61.5	32.0	48.6	81.2	70.5	50.0	75.1
Electronic journals	#	7	7	14	28	36	26	32	94	15	10	7	32
	%	5.2	9.2	15.6	9.3	48.0	31.3	64.0	45.2	12.8	22.7	35.0	17.7
ISAP	#	2	0	10	12	4	4	1	9	1	0	1	2
	%	1.5	0.0	11.1	4.0	5.3	4.8	2.0	4.3	0.9	0.0	5.0	1.1
No answer	#	23	4	10	37	1	2	1	4	6	3	2	11
	%	16.9	5.3	11.1	12.3	1.3	2.4	2.0	1.9	5.1	6.8	10.0	6.1

It was also expected that because the word "electronic" appears in the "electronic journal" option, students will guess it to be the correct answer. The majority of students (74.5% in the pre- and 75.1% in the control group) in these two groups though, thought that the search engine Google will supply full text journal articles. Only 28 (9.3%) and 32 (17.7%) students respectively in the pre- and control group have chosen the correct answer. The preference of students to use a general search

engine to solve all their information needs is also reported by Balas (2003: 31), Griffiths and Brophy (2002: on-line), Seamans (2002: 116), Waldman (2003: on-line) and Warnken (2004: 152 – 153).



The high percentage of students indicating that they do not know the answer is an indication that before arriving at UWC, students did not encounter indexing data bases and are unfamiliar with the concept full text electronic journals.

After completing the Library Science 121 course, most students (48.6%) still thought that Google will be a better option than electronic journals (45.2%) to find full text electronic journal articles.

10.5 Keywords or search terms

10.5.1 Key concepts

As mentioned already, students find determining key words or concepts very difficult – especially if English is not their first language (Davis, 2004: 306; Mitchell & Viles, 2001: 309 and Ruth, 1997: 171). To test their abilities, a scenario that they must write an academic essay with the topic statement “Describe the effects of a thinning ozone layer on the

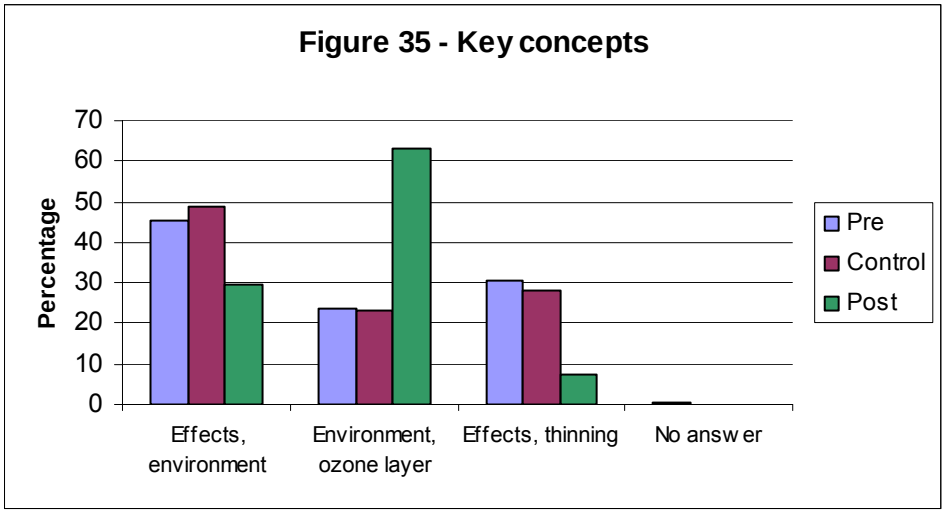
environment" was given. For question 10.1 of the questionnaire, students had to identify the key concepts found in the topic statement. The options given were 1) Effects, environment; 2) Environment, ozone layer and 3) Effects, thinning. For this statement the second option, namely environment and ozone layer will be the best search terms to use if you want to retrieve relevant information.

From responses reflected in table 53 and summarized in figure 35 it is clear that in both the pre- and control groups, most students (45.5% and 48.7% respectively) thought that the best key concepts option will be "effects and environment". Also in both these groups the second most often chosen key concept (30.5% and 28.2% respectively) were the concepts "effects and thinning". The key concept that included both the key concepts, namely "environment and ozone layer" was chosen by only 30.5% and 28.2% respectively of the students in the pre- and control groups.

Table 53 - Key concepts

		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Effects, environment	#	59	34	44	137	27	22	13	62	58	22	8	88
	%	43.3	44.7	48.9	45.4	36.0	26.5	26.0	29.8	49.6	50.0	40.0	48.7
Environment, ozone layer	#	35	23	13	71	43	55	33	131	25	11	6	42
	%	25.7	30.3	14.4	23.5	57.3	66.3	66.0	63.0	21.4	25.0	30.0	23.2
Effects, thinning	#	42	17	33	92	5	6	4	15	34	11	6	51
	%	30.9	22.4	36.7	30.5	6.7	7.2	8.0	7.2	29.1	25.0	30.0	28.2
No answer	#	0	2	0	2	0	0	0	0	0	0	0	0
	%	0.0	2.6	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 35 - Key concepts



After training and practical exercises the majority (63.0%) of students in the post-group indicated that the key concepts “environment and ozone layer” used as search terms will retrieve the most relevant information.

10.5.2 Resources

To answer the second question in section 10, question 10.2, respondents had to use the same topic statement as for question 10.1 and indicate what resource would supply the best information if they had to write an academic essay with that topic. Options given were a 1) dictionary; 2) map; 3) periodical index and 4) gazetteer.

Although a gazetteer would have supplied back ground information on the terms included in the topic, the source that will supply the best information to write an academic essay from the given options will be a periodical index – the retrieval tool that will retrieve journal articles on the topic. Responses are listed in table 54.

In both the pre- and control groups however, a map was chosen as the best resource by the most students (36.8% and 38.1% respectively). A gazetteer was the second most often used (25.2% and 33.7% respectively) while a dictionary was the third most often used (23.5% and 18.2% respectively). In both groups a periodical index was the least popular choice (14.6% and 10.0% respectively).

Figure 36 - Best resource

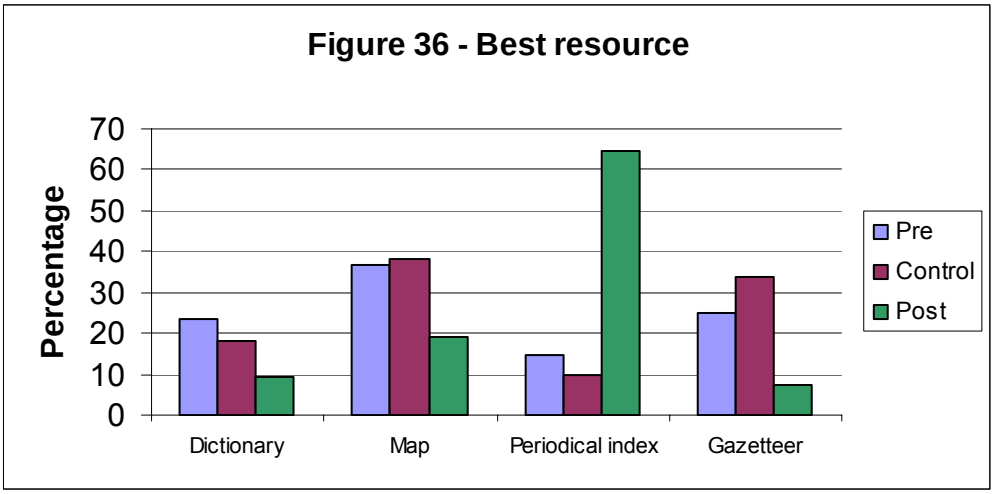


Table 54 - Best resource													
		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Dictionary	#	36	23	12	71	12	4	3	19	25	7	1	33
	%	26.5	30.3	13.3	23.5	16.0	4.8	6.0	9.1	21.4	15.9	5.0	18.2
Map	#	50	26	35	111	12	18	10	40	44	17	8	69
	%	36.8	34.2	38.9	36.8	16.0	21.7	20.0	19.2	37.6	38.6	40.0	38.1
Periodical index	#	29	5	10	44	46	52	36	134	12	2	4	18
	%	21.3	6.6	11.1	14.6	61.3	62.7	72.0	64.4	10.3	4.6	20.0	10.0
Gazetteer	#	21	22	33	76	5	9	1	15	36	18	7	61
	%	15.4	29.0	36.7	25.2	6.7	10.8	2.0	7.2	30.8	40.9	35.0	33.7

It correlates with findings by Caravello, Herschman and Mitchell (2001: 198) and Coupe (1993: 192) that students don't know that journal articles will supply information on current issues in a particular discipline. Most (64.4%) of the students in the post-group had chosen a periodical index as the best resource to find information on the topic.

10.6 Internet & WWW skills

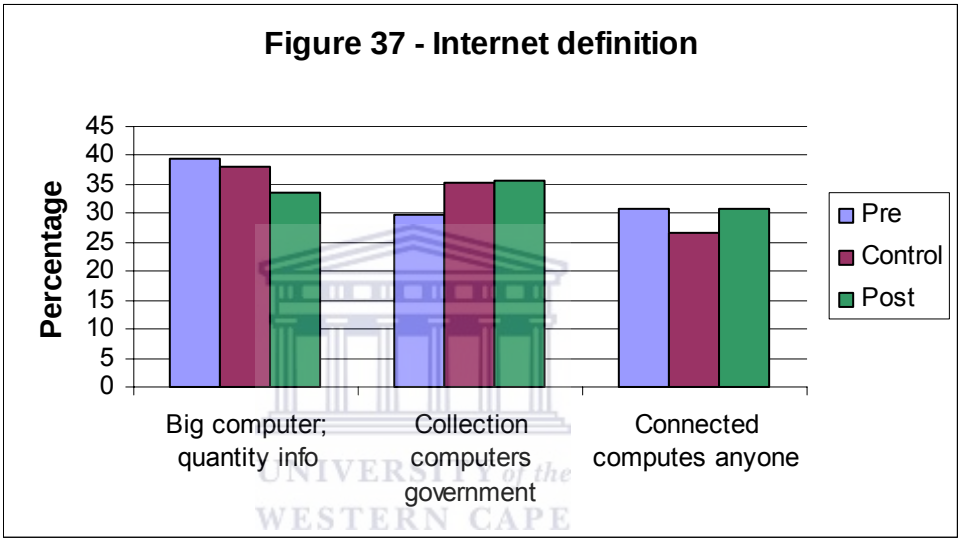
10.6.1 Definitions Internet

For question 11.1 of the questionnaire the respondents were asked to choose the description that describes the Internet the best. Options were either a big computer somewhere which contains a large quantity of information, or a collection of interconnected computers managed by universities, government and large organizations or a huge number of computers of various sizes which are connected and which can belong to anyone.

Table 55 - Internet definition													
		Group											
		Pre				Post				Control			
		03	04	05	Tot	03	04	05	Tot	03	04	05	Tot
		136	76	90	302	75	83	50	208	117	44	20	181
Big computer quantity information	#	59	27	33	119	29	27	14	70	43	21	5	69
	%	43.4	35.3	36.7	39.4	38.7	32.5	28.0	33.7	36.8	47.7	25.0	38.1
Collection computers government	#	29	34	27	90	29	27	18	74	44	10	10	64
	%	21.3	44.7	30.0	29.8	38.7	32.5	36.0	35.6	37.6	22.7	50.0	35.4
Connected computers anyone	#	48	15	30	93	17	29	18	64	30	13	5	48
	%	35.3	19.7	33.3	30.8	22.7	34.9	36.0	30.8	25.6	29.6	25.0	26.5

From table 55 and figure 37 it is clear that most students in the pre-group (39.4%) as well as in the control group (38.1%) regarded the Internet as a vague magical computer somewhere producing information. Slightly more (30.8%) of the pre-group students opted for the correct answer, namely that it is a large number of connected computers belonging to anyone, than the second incorrect answer namely that the Internet is managed by certain people (29.8%). More students in the control group (35.4%) thought that the Internet is managed by universities, governments and large organizations than that the connected computers can belong to anyone (26.5%).

Figure 37 - Internet definition



Each option drew in the thirty percentages (33.7%, 35.6% and 30.8% respectively) of the responses from the post-group. This is an indicator that students still do not have a clear concept of what the Internet was and who managed it.

10.6.2 Evaluation information

Question 11.2 required of the respondents to write down how they will personally determine if an Internet source is reliable. From the overwhelming number of students in all three the groups (82.8%, 86.5% and 95.6% respectively) who didn't attempt to answer the question, it is clear that students even after completing the Library Science 121 course, still do not know how to evaluate information and information sources.

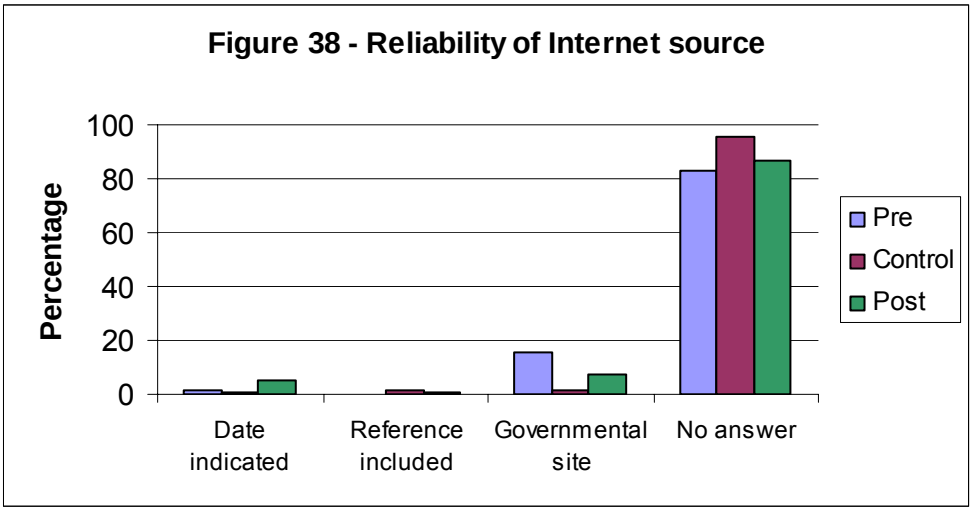


Table 56 - Reliability of Internet source													
		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Date indicated	#	2	1	1	4	4	3	4	11	1	0	1	2
	%	1.5	1.3	1.1	1.3	5.3	3.6	8.0	5.3	0.9	0.0	5.0	1.1
References included	#	0	0	1	1	1	1	0	2	1	1	1	3
	%	0.0	0.0	1.1	0.3	1.3	1.2	0.0	1.0	0.9	2.3	5.0	1.7
Government site	#	23	13	11	47	7	5	3	15	2	0	1	3
	%	16.9	17.1	12.2	15.6	9.3	6.0	6.0	7.2	1.7	0.0	5.0	1.7
No answer	#	111	62	77	250	63	74	43	180	113	43	17	173
	%	81.6	81.6	85.6	82.8	84.0	89.2	86.0	86.5	96.6	97.7	85.0	95.6

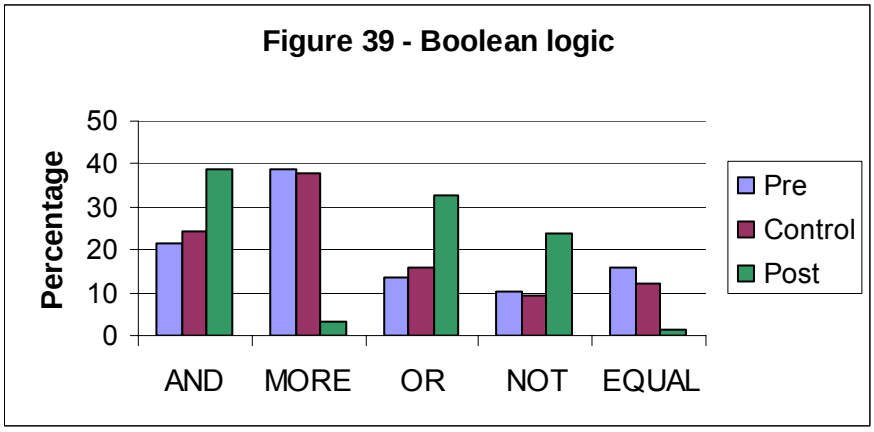
The lack of undergraduate students' ability to evaluate and verify retrieved information from the Internet was also reported by many researchers (Burton & Chadwick, 2000: 320; Caravello, Herchman & Mitchell, 2001: 196; Knight, 2002: 18; De Ruiter, 2002: 201 and Walker and Engel (2003: 135). Albrecht (2001: 27) as well as Ferguson, Neely and Sullivan (2006: 61-71) concluded that students need professional guidance on the evaluation of Internet information.

10.6.3 Boolean logic

As Boolean logic is used in any search statement, question 11.3 tested whether students know the different Boolean operators they can use when searching catalogues, databases or the Internet. Five options were given: AND, MORE, OR, NOT and EQUAL. Respondents were asked to tick all

the relevant answers as three (AND, OR and NOT) options are correct and two options (MORE and EQUAL) are correct. Responses were as follows:

Figure 39 - Boolean logic



Most students in the pre-group (39.0%) as well as the control group (38.0%) have chosen the incorrect MORE option. As only 21.5%, 13.7% and 10.1% of respondents in the pre-group and 24.4%, 16.0% and 9.4% of the control group have chosen the three correct options respectively, it can be concluded that students were not familiar with Boolean operators.

Table 57 - Boolean logic

		Group											
		Pre 302				Post 208				Control 181			
		03 177	04 97	05 121	Tot 395	03 175	04 199	05 119	Tot 493	03 138	04 51	05 24	Tot 213
AND	#	40	18	27	85	64	80	47	191	33	15	4	52
	%	22.6	18.6	22.3	21.5	36.6	40.2	39.5	38.7	23.9	29.4	16.7	24.4
MORE	#	53	43	58	154	9	6	1	16	50	20	11	81
	%	29.9	44.3	47.9	39.0	5.1	3.0	0.8	3.3	36.2	39.2	45.8	38.0
OR	#	28	13	13	54	54	64	44	162	24	8	2	34
	%	15.8	13.4	10.7	13.7	30.9	32.2	37.0	32.9	17.4	15.7	8.3	16.0
NOT	#	23	9	8	40	45	46	26	117	12	5	3	20
	%	13.0	9.3	6.6	10.1	25.7	23.1	21.9	23.7	8.7	9.8	12.5	9.4
EQUAL	#	33	14	15	62	3	3	1	7	19	3	4	26
	%	18.6	14.4	12.4	15.7	1.7	1.5	0.8	1.4	13.8	5.9	16.7	12.2

Although results of the post-group indicated that students were able to distinguish between the correct and the incorrect options (only 3.3% and 1.4% of students have chosen the MORE and EQUAL option respectively), the relative low percentages for the correct options are reason for concern. It seems as if students are not using these Boolean operators in their search statements and will therefore still find irrelevant

information. This trend was also reported by Hutcherson (2004: 349), Jacobson and Mark (2000: 256) and James (2006: 527). A reason might be the fact that popular search engines like Google will automatically use the AND Boolean operator when more than one key word is used.

10.6.4 On-line database

Question 11.4 instructed students to choose from four options the one that will describe an on-line database the best. The options given were 1) a list of electronic information sources, 2) a collection of website, 3) a database accessible via telephone and 4) a database accessible via the Internet. Responses were as follows:

Figure 40 - Definition on-line database

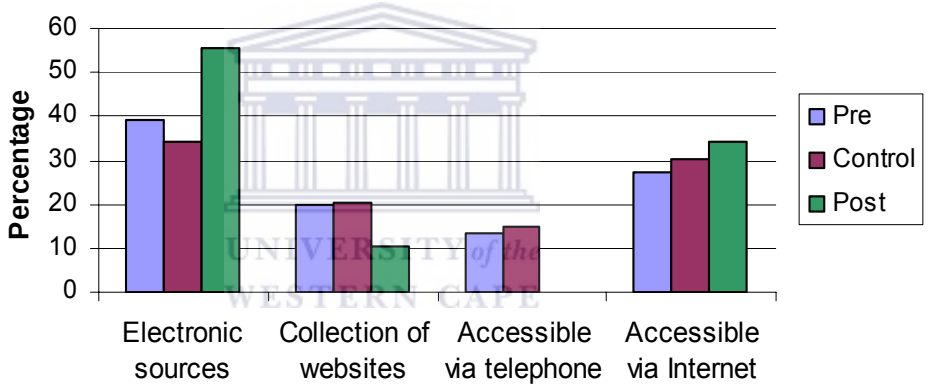


Table 58 – Definition on-line database

		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Electronic sources	#	49	23	47	119	46	37	32	115	45	14	3	62
	%	36.0	30.3	52.2	39.4	61.3	44.6	64.0	55.3	38.5	31.8	15.0	34.3
Collection websites	#	32	19	9	60	4	17	1	22	21	9	7	37
	%	23.5	25.0	10.0	19.9	5.3	20.5	2.0	10.6	18.0	20.5	35.0	20.4
Accessible telephone	#	17	12	11	40	0	0	0	0	17	8	2	27
	%	12.5	15.8	12.2	13.3	0.0	0.0	0.0	0.0	14.5	18.2	10.0	14.9
Accessible Internet	#	38	22	23	83	25	29	17	71	34	13	8	55
	%	27.9	29.0	25.6	27.5	33.3	34.9	34.0	34.1	29.1	29.6	40.0	30.4

Most students in the pre- (39.4%). control (34.2%) and post- (55.3%) groups knew that an on-line database is a collection of electronic information sources. This does relate however to research done by

Massey-Burzio (1998: 211). Students at Johns Hopkins University commented that they do not know the difference between an on-line catalogue and a database.

10.6.5 Search statement

To test if students understand Boolean logic, question 11.5 requested the respondents to indicate whether the search statement 'cats and dogs' or 'cats or dogs' will retrieve fewer items. Most students in both the pre- (66.9%) and the control groups (85.6%) have chosen the wrong answer, namely 'cats or dogs'. Respectively 8 and 9 students in these groups did not answer – indicating that they do not know the difference between an 'and' or an 'or' search. Results are listed in figure 41 and table 59.

Responses by the post-group resulted in 58.7% of the students indicating that 'cats and dogs' will retrieve fewer items. Considering that 41.4% of students in the same group thought that the search statement 'cats or dogs' will retrieve less items, it can't be concluded that students know how to use Boolean logic.

Figure 41 - Search statement to retrieve fewer hits

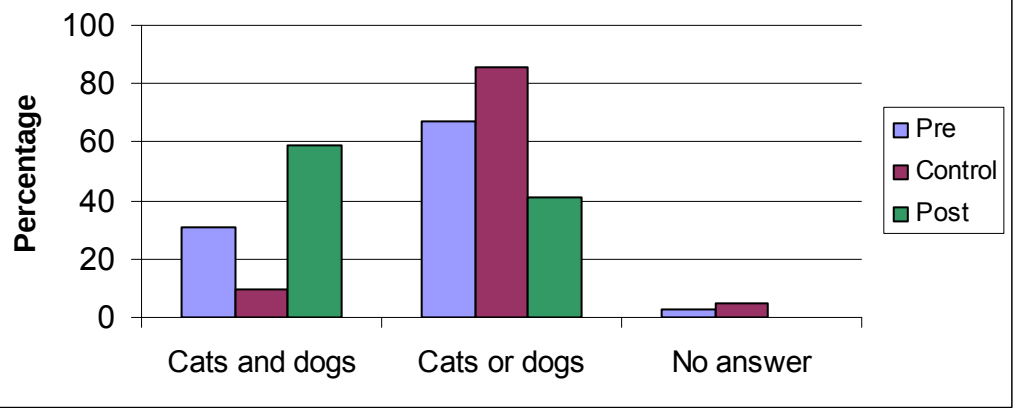


Table 59 - Search statement to retrieve fewer items													
		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Cats and dogs	#	58	15	19	92	35	63	24	122	15	1	1	17
	%	42.6	19.7	21.1	30.5	46.7	75.9	48.0	58.7	12.8	2.3	5.0	9.4
Cats or dogs	#	75	59	68	202	40	20	26	86	99	39	17	155
	%	55.1	77.6	75.6	66.9	53.3	24.1	52.0	41.4	84.6	88.6	85.0	85.6
No answer	#	3	2	3	8	0	0	0	0	3	4	2	9
	%	2.2	2.6	3.3	2.7	0.0	0.0	0.0	0.0	2.6	9.1	10.0	5.0

10.6.6 Search engines

As a final question, students were asked to indicate whether Google, Altavista and Ananzi are examples of children's books, insects, search engines or electronic databases. Detailed results are recorded in table 60 and summarized in figure 42:

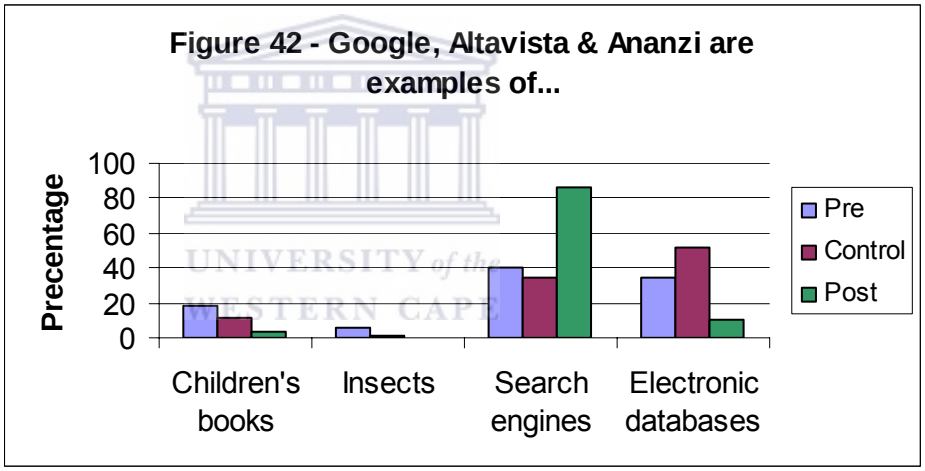


Table 60 - Google, Altavista & Ananzi are examples of…													
		Group											
		Pre				Post				Control			
		03 136	04 76	05 90	Tot 302	03 75	04 83	05 50	Tot 208	03 117	04 44	05 20	Tot 181
Children's books	#	37	6	11	54	6	0	0	6	15	5	0	20
	%	27.2	7.9	12.2	17.9	8.0	0.0	0.0	2.9	12.8	11.4	0.0	11.1
Insects	#	13	3	1	17	0	0	0	0	1	1	1	3
	%	9.6	4.0	1.1	5.6	0.0	0.0	0.0	0.0	0.9	2.3	5.0	1.7
Search engines	#	52	23	46	121	57	80	43	180	38	17	7	62
	%	38.2	30.3	51.1	40.1	76.0	96.4	86.0	86.5	32.5	38.6	35.0	34.3
Electronic databases	#	34	41	29	104	12	3	7	22	62	21	11	94
	%	25.0	54.0	32.2	34.4	16.0	3.6	14.0	10.6	53.0	47.7	55.0	51.9
No answer	#	0	3	3	6	0	0	0	0	1	0	1	2
	%	0.0	4.0	3.3	2.0	0.0	0.0	0.0	0.0	0.9	0.0	5.0	1.1

Although amazingly some students in the pre- and control groups thought that Google, Altavista and Ananzi are examples of children's books or insects, most students (43.4%) in the pre-group knew that search engines is the correct answer.

In the control group the students regarding electronic databases (51.9%) as the correct answer were more than those who has indicated search engines (34,4%) as the correct answer. From the responses it is clear that without formal education students are not familiar with different search engines.

As students are taught about search engines and make practical use of some of them during the Library Science 121 course, the majority (86.5%) in the post-group knew that Google, Altavista and Ananzi are examples of search engines.

10.7 Conclusion

From the results of the thirty three questions to test baseline information literacy competence of incoming UWC Arts the following profile emerged.

Most students do not know

- that a bibliography is a list of information sources
- that websites are the sources with the most up to date information
- that almanacs are sources of annual facts and events
- that periodical indexes are used to locate journal articles
- that they must consult a dictionary first to understand meaning(s) of words
- how to cite an information resource
- referencing techniques
- what plagiarism entails
- that local on-line catalogues will reflect the local library's holdings
- what resources are catalogued in library catalogues
- the difference between the catalogue record of a book, a journal and a newspaper
- that the shelf number is used to locate a resource in the library
- how to use the shelf number to locate a resource in the library
- the purpose of recording the subject of the book on the catalogue record
- how to use truncation
- how to use Boolean logic
- what search terms to use to retrieve the most relevant information
- when a journal article is the best source to use
- the parts of a journal article citation
- how to evaluate information and information sources
- names of different search engines

Students thought that

- books are information sources with the most recent information
- magazines will supply up to date pertinent information
- they will find a journal article doing an author search in the library catalogue
- will find books with the exact topic as their assignments
- local catalogues will reflect all the books published in a country
- government will always supply objective and reliable information
- reference technique is not an important aspect of their academic work
- only using other authors' work without acknowledging the source is plagiarism
- the place of publication can be a country
- the ISBN can be used to locate a resource in the library
- the library catalogue will retrieve journal articles
- the Internet is a vague magical computer somewhere producing information
- the Internet is managed by universities, governments and large organizations

Most students could identify the publication date of a resource in the catalogue record and knew that

- phone books will supply addresses and phone number
- dictionaries will explain words
- serial publications are published on a continuing basis at regular intervals
- an online database is a collection of electronic information sources

After the Library Science 121 course the students (post group) knew that

- a bibliography is a list of information sources
- a serial is published at regular intervals
- Websites are sources of up to date information
- a directory contains addresses and phone numbers
- a dictionary is consulted to find meanings of words
- when writing an assignment the first task is to use a dictionary to familiarize themselves with the exact meaning of words
- Websites will supply current ongoing information
- a citation of a book consists of the author, date, title, place of publisher and publisher
- the online catalogue will reflect the holdings of a particular library
- the shelf number is used to locate the book in the library
- an index or abstract is used to find journal articles
- that a journal citation consists of the author, date, article title, journal title, volume and pages
- journal articles are the best sources to use for writing academic assignments that will reflect current trends and developments in a specific discipline
- AND is a Boolean operator
- The Boolean operator AND will refine a search and retrieve fewer items
- Google, Altavista and Ananzi are search engines

11. FINDINGS : INFORMATION LITERACY SCORE AND IMPACT ON ACADEMIC PERFORMANCE

11.1 Introduction

To determine the baseline information literacy score of each respondent, for each correct answer from question 7.1 until the question 11.6 for both the pre- and post-groups, a score of 3 was allocated. As there were 40 opportunities to supply correct answers, a perfect score will be 120. Because of absenteeism and students were not forced to supply student numbers, a t-test to compare pre- and post-test scores couldn't be done. The scores for the different groups recorded are summarized in the tables below.

11.2 Information literacy scores

11.2.1 Information literacy scores of pre-groups

The average score of the pre-groups for the three years did not fluctuate much. It was respectively 34.21, 32.28 and 33.43. The average score for the pre-group over the three years was 33.28. If the perfect score of 120 is considered, it can be concluded that the information literacy score of the students in the pre-groups can be rated as very low.

TABLE 61

INFORMATION LITERACY SCORES

PRE-GROUP

	2003 136	**2004** 76	**2005** 90
Minimum	9	12	9
First quartile	27	21	24
Median	33	30	30
Third quartile	39	42	42
Maximum	72	63	72
Average	34.21	32.28	33.43
Standard deviation	11.27462	13.38837	13.7849

11.2.2 Information literacy scores of control groups

The average scores for the control groups also did not deviate much. The average scores obtained for the three years were 34.13, 35.52 and 31.35 respectively. The average of the whole control group over the three years was 33.67. It is slightly higher than that of the pre-groups. Considering that the students in the control group have been at UWC for a whole year when their information literacy was assessed, the information literacy of students in the control group is rated as very low. It is an indication that the information literacy training by academics within Arts first year courses and the information literacy initiatives by the UWC library are not enough to ensure information literate students. The scores obtained by the control group are summarized in table 62 below:

TABLE 62

INFORMATION LITERACY SCORES

CONTROL GROUP

	2003 117	**2004** 44	**2005** 20
Minimum	6	15	0
First quartile	27	27	21
Median	30	33	30
Third quartile	45	45	42
Maximum	78	63	60
Average	34.13	35.52	31.35
Standard deviation	14.79831	12.07122	16.37713

11.2.3 Information literacy scores of post-groups

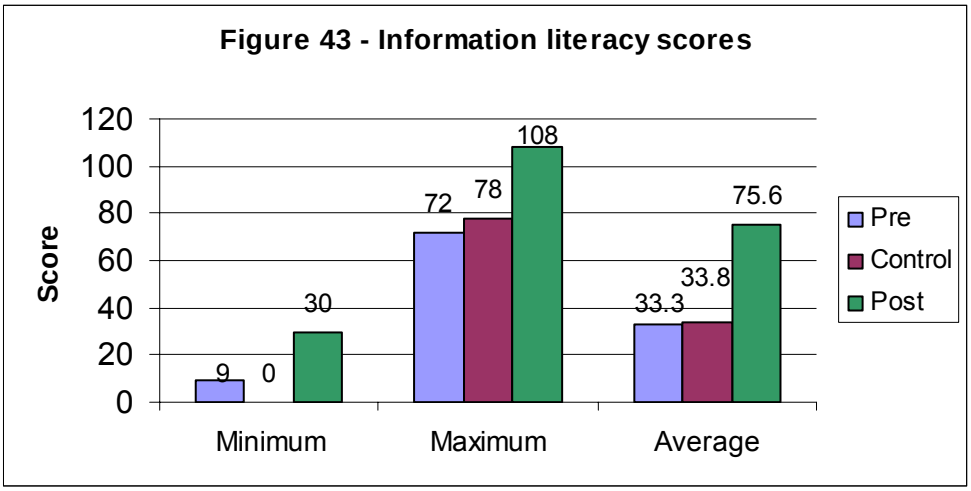
The average information literacy scores for the post-groups (summarized in table 63 below) are respectively 68.58, 79.72 and 78.37 for the years 2003, 2004 and 2005. The scores for the years 2004 and 2005 are very similar, and are significantly higher than the score of the 2003 group. The reason might be that the Library Science 121 was offered in 2003 for the first time and that some teaching problems were sorted out before it was offered again the consecutive years. The average score for all the post-

groups was 75.556 out of a perfect score of 120. It indicates that students on average had about 60% of the answers correct.

TABLE 63 INFORMATION LITERACY SCORES POST-GROUP			
	2003 75	**2004** 83	**2005** 50
Minimum	30	48	54
First quartile	60	72	72
Median	67.5	81	78
Third quartile	78	90	89.25
Maximum	96	108	102
Average	68.58	79.72	78.37
Standard deviation	13.75049	12.47244	11.50518

11.2.4 Comparison of information literacy scores

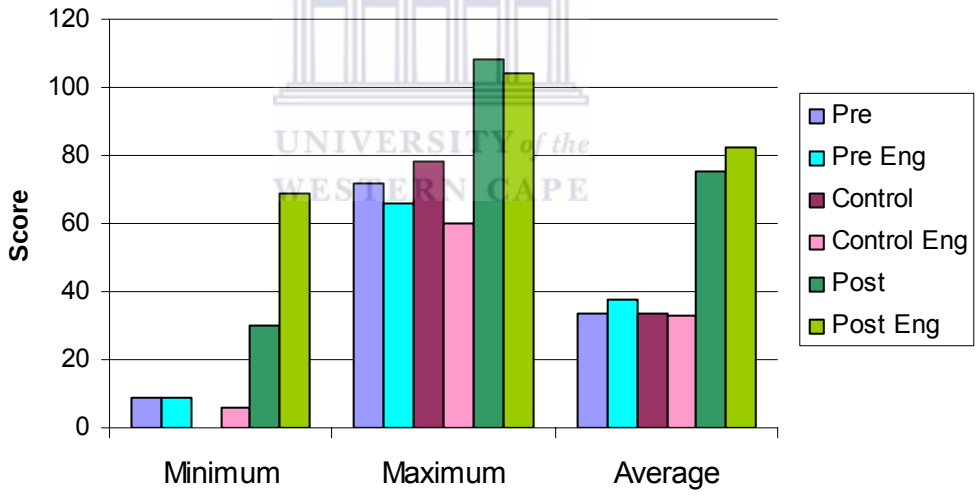
It can be seen from figure 43 that the minimum score of the control group was zero and therefore not appearing on the chart. The average information literacy scores of the pre- and control groups did not differ much (33.306 and 33.666). The average information literacy score of the post-groups was significantly higher (75.556) than the other groups. It is an indication that the students were more information literate after doing the Library Science 121 course than before they did it. It also shows that incoming students don't become information literate by doing Arts courses during their first year of study.



11.2. 5 Information literacy score of student with English as mother tongue

The information literacy scores of students who indicated that their mother tongue is English were determined separately from the whole group that included non-English first language students. The information literacy scores for the pre-group ranged from 9 to 66. Those of the control group from 6 to 60. For the post-group the scores ranged from 69 to 104. The average information literacy score for the pre- control and post-group were respectively 37.643, 32.733 and 82.577. Compared with the whole group's score, students in the control group had lower scores (33.556 and 32.733). In both the pre- (37.643 and 33.306) and post- (82.577 and 75.556) group the information literacy scores of the students with English as mother tongue were higher. Results are reflected in figure 11.2.5.

Figure 44 - Information literacy score English mother tongue



11.3 Impact on academic performance

Fifty four students in the 2003 post-group volunteered to partake in the study to trace their academic performance. Their information literacy scores, Library Science 121 results and their academic status by the end of 2005 were recorded. Students were divided into four groups, namely those who faied well academically and graduated within the prescribed

time, students who are faring reasonable well, but will not graduate in the prescribed time, students who ceased their programs and students who failed academically.

11.3.2 Academically successful

For BA and BEd students the set time to complete the program is three years. As the BBibl is a four year program, BBibl students who are in their third year of study were also included in this group. Sixteen students were regarded as being academically successful:

TABLE 64 - ACADEMICALLY SUCCESSFUL

#	Information literacy score - maximum 120	Library Science 121 %	Academic status 2005
1	51	59	BA completed
2	60	55	BA completed
3	60	57	BA completed
4	60	65	BA completed
5	60	51	Bed completed
6	63	63	BA completed
7	63	50	BA completed
8	66	53	BA completed
9	69	57	BA completed
10	69	50	BBibl III
11	75	69	BA completed
12	81	59	Bed completed
13	81	56	BBibl III
14	87	63	BA completed
15	93	64	BA completed
16	93	69	BA completed

The information literacy score of this group of students varied from a low 51 to a high of 93. Marks obtain for the Library Science 121 course varied from 50% to 69%. It can be concluded that students fared fairly well in both the information literacy competence assessment questionnaire and the information literacy course.

11.3.3 Academically reasonably sucessful

Eleven students who managed to promote till third year level, but who did not complete their final year successfully in order to graduate were included in this group. Two students who reached as BCur and LLB third year level were also included. Two part time students who managed to reach BA II status after three years of study also formed part of this group. Two students with the academic status of BA I after three years of study are also included in this group. The fact that they are not academically refused is an indication that they are part time students doing only a limited number of courses each year. Details of performances are summarized in table 11.3.2 below:

TABLE 65 - ACADEMICALLY REASONABLE SUCCESSFUL

#	Information literacy Post-score	Library Science 121 %	Academic status 2005
1	51	54	BA III failed final year
2	57	46	BA I part time
3	60	66	BA III failed final year
4	63	64	BA I part time
5	63	53	BA III failed final year
6	63	71	LLB III
7	66	52	BA III failed final year
8	69	26	BA III failed final year
9	69	52	BA III failed final year
10	75	63	BA III failed final year
11	81	53	BA II Part time
12	84	37	BA III failed final year
13	84	50	BA III failed final year
14	87	46	BA III failed final year
15	90	58	BA III failed final year
16	90	66	BCur III
17	93	71	BA II Part time

The information literacy score of this group of students varied from the lowest 51 to the highest of 93. Marks obtained for the Library Science 121 course ranged from 37% up to 71%. No significant differences in these scores and marks compared to the academically successful group were observed.

11.3.4 Students who ceased their programs

TABLE 66 - CEASED PROGRAMS			
#	Information literacy score -maximum 120	Library Science 121 results %	Academic status end 2005
1	57	52	Ceased program
2	63	54	Ceased program
3	84	55	Ceased program
4	90	60	Ceased program
5	93	66	Ceased program

From table 11.3.3 it can be seen that five students dropped out as students and ceased their programs. The information literacy scores obtained by this group of students varied from 57 till 93. Marks for Library Science 121 ranged from 52% till 66%. It seems as if the reason for dropping out as a student at UWC is not academically founded.

11.3.4 Failed academically

A big group was formed by students who failed academically. Sixteen students were refused academically in 2004. That means that they did not pass enough modules after three years of study to be promoted to second year level and will not be allowed to register for the same course again.

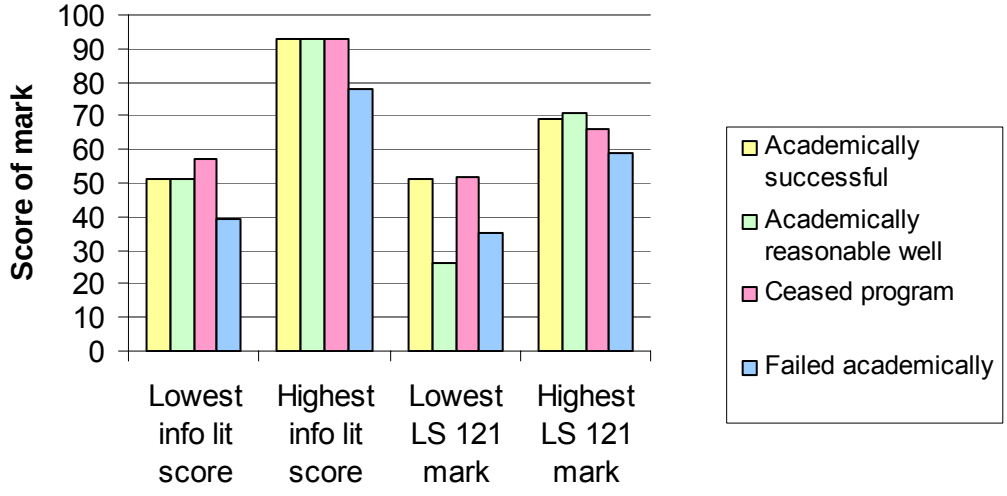
The information literacy scores of this group of students ranged from a low of 39 to a high of 78. Marks for Library Science 121 ranged from 6 failure marks (35% - 45%) to a high of 59%. It seems as if the leap from secondary school to university students was too large to overcome. Details are given in table 67.

TABLE 67 - FAILED ACADEMICALLY			
#	Information literacy score - maximum 120	Library Science 121 %	Academic status 2005
1	39	37	Academically refused 2004
2	45	45	Academically refused 2004
3	51	45	Academically refused 2004
4	51	51	Academically refused 2004
5	57	55	Academically refused 2004
6	60	36	Academically refused 2004
7	60	54	Academically refused 2004
8	60	59	Academically refused 2004
9	63	55	Academically refused 2004
10	66	35	Academically refused 2004
11	69	44	Academically refused 2004
12	69	52	Academically refused 2004
13	69	50	Academically refused 2004
14	72	50	Academically refused 2004
15	78	58	Academically refused 2004
16	78	51	Academically refused 2004

11.3.5 Comparison of academic performance

No consistent correlation between the information literacy score, Library Science 121 mark and academic performance could be detected.

Figure 45 - Academic performance



11.4 Conclusion

The baseline information literacy scores of incoming UWC Arts students in the pre- and control groups ranged from as low as 6 to as high as 78 of a maximum of 120. The average information literacy scores of the pre- and control groups did not differ much (33.306 and 33.666). The information literacy score of the post-groups was significantly higher (75.556) than the other groups. The higher scores obtained by the post-group students are an indication that the Library Science 121 course had a positive impact on the levels of information literacy, that students are more information literate after doing the Library Science 121 course and that incoming students do not become information literate by doing Arts courses during their first year of study.

Of the fifty four students in the 2003 post-group who volunteered to partake in the study to trace their academic performance, only sixteen completed their programs by 2005. The two part-time students were regarded as fairing academically reasonably well. Although they did not complete their programs by 2005, they both reached BA II status – a normal progression for part-time students. All of these eighteen students passed the Library Science 121 course and received information literacy scores ranging from 51 to 93.

The rest of the students ceased their programs, had limited success academically or were failed academically by the university. This group of students had such varying information literacy scores and marks for Library Science 121 that no consistent correlation between the information literacy score, Library Science 121 mark and academic performance could be detected.

12. CONCLUSION AND RECOMMENDATIONS

12.1 Overview

The purpose of this study has been to explore the information literacy level of incoming undergraduate Arts students at the UWC. It set out to assess information literacy competencies and proficiencies.

The main research questions centres on:

- What are incoming Arts students' previous experiences with libraries and information technology?
- What are the baseline information skills, competencies and proficiencies of incoming Arts students at UWC?
- Should the existing Library Science 121 (Arts information literacy) course be adapted to ensure sufficient teaching of information literacy?
- Is a generic faculty wide information literacy course needed to ensure that all Arts students acquire an acceptable level of information literacy or is the Library Science 121 course plus the library's information initiatives sufficient enough?
- Does information literacy impact on academic success of Arts students at UWC?

It was observed informally by lecturers that many incoming undergraduate Arts students at UWC are because of enormous varying secondary school experiences and competencies without even the lower order information skills. The lack of these crucial skills impacts negatively on how students cope academically and measure up to demands of employers. This problem could best be answered by examining current developments in a number of related areas. Thus the following objectives for this study were identified:

- To assess the information literacy level of incoming undergraduate Arts students at UWC to establish a baseline of information competence skills
- To investigate whether existing information literacy initiatives within the Arts faculty teach information literacy sufficiently
- To determine the impact of the Library Science 121 course on information literacy levels
- To gather reliable data as support for an information literacy course for all UWC Arts students

In order to assess information literacy levels a theoretical framework and a method of assessment are needed. The literature review of the first five chapters provided the basis of such a theoretical framework. In chapter one concepts were described and clarified. Chapter two and three were used to establish the importance of being information literate for students, employees and lifelong learners. Chapter four gave an overview of the international standards, outcomes, rubrics and best practices associated with information literacy skills, competencies and proficiencies. The importance of establishing collaboration and partnerships among information literacy instructors, academics and the academic librarians were emphasised. Chapter five gave an overview of the need for assessment and the various assessment methods being implemented in practice.

Chapters six and seven were dedicated to international as well as specific South African research findings on information literacy competencies and proficiencies of incoming undergraduate students. It established a trend that incoming undergraduate students are not as information literate as they should be and need formal information literacy education.

Motivation for the use of a pre- and post-test questionnaire is given in chapter eight. As respondents for both the pre- and post-questionnaire incoming undergraduate Arts students of UWC doing the Library Science 121 course were chosen. For the control groups, incoming Arts students

who did not enrol for the Library Science 121 course completed the post-test at the end of their first year of study.

Twenty six questions of the questionnaire were dedicated to gather information on personal aspects, computer access prior to registering at UWC, school library access, public library usage and reading habits. This information was used to construct a profile of the average incoming undergraduate Arts student at UWC.

The motivation for developing and introducing an information literacy course was addressed in chapter seven. To establish the impact of this course the results of the pre- and the post-groups were compared.

To establish whether students mastered information literacy skills during their first year of undergraduate studying without doing an information literacy course, the results of the control groups were compared with those of the post-groups.

By integrating the empirical data from the survey with the theoretical approaches of the earlier chapters, certain findings were made. These findings can be used as evidence to reach a conclusion for the study. The findings can be summarized as follows:

1) Prior to arriving at UWC, the average Arts student is not computer literate, has very limited access to computers, does not use e-mail, does not use the WWW as an information resource, is not a dedicated library user, is not library literate and is not a keen reader for pleasure or for research assignments.

2) Results of the pre-test indicated that the baseline information literacy level of an average incoming undergraduate Arts student range from low to very low. The average information literacy score was 33.306 out of a perfect score of 120.

3) The comparison of pre- and post-tests indicated that the Library Science 121 course impacted positively on information literacy scores. The average information literacy score has risen to 75.556 out of a perfect score of 120.

4) The comparison of control and post-tests indicated that students who did not enrol for the information literacy course had lower information literacy scores. The average information literacy score for these groups was 33.666. It is an indication that not all Arts students pick up information skills during academic courses or by attending information literacy initiatives offered by the academic library at UWC.

12.2 Recommendations

If Arts faculty wants to ensure that all Arts students exit the university as information literate individuals, it is advisable that all incoming students are submitted to an assessment instrument for testing information literacy. The assessment can be similar or a shortened edition of the questionnaire used for this study. To accommodate large student numbers, an on-line self marking test can be developed. Students who pass the test will be exempted from information literacy training initiatives. Students failing the test must be compelled or at least motivated to register for a credit bearing information literacy course.

As all Arts students may register for the Library Science 121 Information literacy course, the Arts faculty should market the course during the orientation and registration week. Academics in the Arts faculty should be aware of what the course entails and refer students where necessary to register for the course.

Academics should also be aware that students will not on their own pick up the necessary information literacy skills. They experience library anxiety and /or information overload and are overwhelmed by the quantity of information available. They find it difficult to construct search strategies

to retrieve relevant information, to navigate different information communication technologies and to evaluate and select quality information. Without education they will not be able to construct a coherent academic essay with correct citing and references to prevent plagiarism.

The current Library Science 121 course offered at UWC as an information literacy course proved to be an effective model to teach incoming Arts students at the UWC with their unique needs, cultural diversity, multilingualism and lack of competencies and experience with regards to information literacy at school level. The course succeeded in not only getting Arts students information literate, but ensured that they master information skills, become effective library users and improve their assignment writing competencies.

Additional attention should be given during the Library Science 121 course to the difference in format between a book and a journal article catalogue record, the retrieval tools used to find journal articles and the format and interpretation of citations. Students need more practice in search strategy to find journal articles, using indexing and full text data bases to find journal articles, how to evaluate information and information resources (especially websites) and how to prevent plagiarism.

After completing an information literacy course in their first year of study, students need other information literacy initiatives during the rest of their study years to develop and mature the skills mastered. Academics should integrate information literary programs into their curricula. Collaboration between academics and university librarians is necessary to ensure effective learning and the implementation of information literacy competencies and proficiencies, critical thinking and lifelong learning.

12.3 Recommendations for further research

Currently at the Arts faculty of UWC there is scope for better collaboration between all role players regarding information literacy training. Further research investigating existing information literacy initiatives within the Arts faculty should be useful. A more transparent theoretical framework for teaching information literacy skills within disciplines can be established and developed. If all initiatives speak with one voice, students' education will benefit.

As this study concentrated only on the Arts faculty, further research to investigate information literacy initiatives and the assessment of information literacy of students in other faculties at UWC would be useful. The need and viability of a campus-wide generic information literacy course for all students at UWC should be investigated.

12.4 Concluding comments

The study started with the hypothesis that incoming Arts students at the UWC are not information literate and that without an accredited formal information literacy course as part of their curriculum, students will not become information literate. The pre-test proved that the information literacy levels of these students were very low. The control test proved that students at the end of their first year of study in the Arts faculty did not master enough information literacy skills by doing the normal required Arts courses. The information literacy training efforts of the academic library will not be successful without the academics involved ensuring that all students undergo the training and apply the competencies in academic work. The post-test of this study proved that the Library Science 121 course improved the information literacy levels of incoming Arts students at the UWC.

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APPENDIX A
STANDARDS, PERFORMANCES INDICATORS AND OUTCOMES ASSOCIATION OF COLLEGE AND RESEARCH LIBRARIES, AMERICA

Standards, Performance Indicators, and Outcomes

Standard One

The information literate student determines the nature and extent of the information needed.

Performance Indicators:

1. The information literate student defines and articulates the need for information.

   Outcomes Include:

   a. Confers with instructors and participates in class discussions, peer workgroups, and electronic discussions to identify a research topic, or other information need
   b. Develops a thesis statement and formulates questions based on the information need
   c. Explores general information sources to increase familiarity with the topic
   d. Defines or modifies the information need to achieve a manageable focus
   e. Identifies key concepts and terms that describe the information need
   f. Recognizes that existing information can be combined with original thought, experimentation, and/or analysis to produce new information

2. The information literate student identifies a variety of types and formats of potential sources for information.

   Outcomes Include:

   a. Knows how information is formally and informally produced, organized, and disseminated
   b. Recognizes that knowledge can be organized into disciplines that influence the way information is accessed
   c. Identifies the value and differences of potential resources in a variety of formats (e.g., multimedia, database, website, data set, audio/visual, book)
   d. Identifies the purpose and audience of potential resources (e.g., popular vs. scholarly, current vs. historical)
   e. Differentiates between primary and secondary sources, recognizing how their use and importance vary with each discipline
   f. Realizes that information may need to be constructed with raw data from primary sources

3. The information literate student considers the costs and benefits of acquiring the needed information.

   Outcomes Include:

   a. Determines the availability of needed information and makes decisions on broadening the information seeking process beyond local resources (e.g., interlibrary loan; using resources at other locations; obtaining images, videos, text, or sound)
   b. Considers the feasibility of acquiring a new language or skill (e.g., foreign or discipline-based) in order to gather needed information and to understand its context
   c. Defines a realistic overall plan and timeline to acquire the needed information

4. The information literate student reevaluates the nature and extent of the information need.

   Outcomes Include:

   a. Reviews the initial information need to clarify, revise, or refine the question

b. Describes criteria used to make information decisions and choices

Standard Two

The information literate student accesses needed information effectively and efficiently.

Performance Indicators:

1. The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing the needed information.

   Outcomes Include:

   a. Identifies appropriate investigative methods (e.g., laboratory experiment, simulation, fieldwork)
   b. Investigates benefits and applicability of various investigative methods
   c. Investigates the scope, content, and organization of information retrieval systems
   d. Selects efficient and effective approaches for accessing the information needed from the investigative method or information retrieval system

2. The information literate student constructs and implements effectively-designed search strategies.

   Outcomes Include:

   a. Develops a research plan appropriate to the investigative method
   b. Identifies keywords, synonyms and related terms for the information needed
   c. Selects controlled vocabulary specific to the discipline or information retrieval source
   d. Constructs a search strategy using appropriate commands for the information retrieval system selected (e.g., Boolean operators, truncation, and proximity for search engines; internal organizers such as indexes for books)
   e. Implements the search strategy in various information retrieval systems using different user interfaces and search engines, with different command languages, protocols, and search parameters
   f. Implements the search using investigative protocols appropriate to the discipline

3. The information literate student retrieves information online or in person using a variety of methods.

   Outcomes Include:

   a. Uses various search systems to retrieve information in a variety of formats
   b. Uses various classification schemes and other systems (e.g., call number systems or indexes) to locate information resources within the library or to identify specific sites for physical exploration
   c. Uses specialized online or in person services available at the institution to retrieve information needed (e.g., interlibrary loan/document delivery, professional associations, institutional research offices, community resources, experts and practitioners)
   d. Uses surveys, letters, interviews, and other forms of inquiry to retrieve primary information

4. The information literate student refines the search strategy if necessary.

   Outcomes Include:

   a. Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized
   b. Identifies gaps in the information retrieved and determines if the search strategy should be revised
   c. Repeats the search using the revised strategy as necessary

5. The information literate student extracts, records, and manages the information and its sources.

   Outcomes Include:

   a. Selects among various technologies the most appropriate one for the task of extracting the needed information (e.g., copy/paste software functions, photocopier, scanner, audio/visual equipment, or exploratory instruments)
   b. Creates a system for organizing the information
   c. Differentiates between the types of sources cited and understands the elements and correct syntax of a citation for a wide range of resources
   d. Records all pertinent citation information for future reference
   e. Uses various technologies to manage the information selected and organized

Standard Three

The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

Performance Indicators:

1. The information literate student summarizes the main ideas to be extracted from the information gathered.

   Outcomes Include:

   a. Reads the text and selects main ideas
   b. Restates textual concepts in his/her own words and selects data accurately
   c. Identifies verbatim material that can be then appropriately quoted

2. The information literate student articulates and applies initial criteria for evaluating both the information and its sources.

   Outcomes Include:

   a. Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias
   b. Analyzes the structure and logic of supporting arguments or methods
   c. Recognizes prejudice, deception, or manipulation
   d. Recognizes the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information

3. The information literate student synthesizes main ideas to construct new concepts.

   Outcomes Include:

   a. Recognizes interrelationships among concepts and combines them into potentially useful primary statements with supporting evidence
   b. Extends initial synthesis, when possible, at a higher level of abstraction to construct new hypotheses that may require additional information
   c. Utilizes computer and other technologies (e.g. spreadsheets, databases, multimedia, and audio or visual equipment) for studying the interaction of ideas and other phenomena

4. The information literate student compares new knowledge with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information.

Outcomes Include:

a. Determines whether information satisfies the research or other information need
b. Uses consciously selected criteria to determine whether the information contradicts or verifies information used from other sources
c. Draws conclusions based upon information gathered
d. Tests theories with discipline-appropriate techniques (e.g., simulators, experiments)
e. Determines probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions
f. Integrates new information with previous information or knowledge
g. Selects information that provides evidence for the topic

5. The information literate student determines whether the new knowledge has an impact on the individual's value system and takes steps to reconcile differences.

Outcomes Include:

a. Investigates differing viewpoints encountered in the literature
b. Determines whether to incorporate or reject viewpoints encountered

6. The information literate student validates understanding and interpretation of the information through discourse with other individuals, subject-area experts, and/or practitioners.

Outcomes Include:

a. Participates in classroom and other discussions
b. Participates in class-sponsored electronic communication forums designed to encourage discourse on the topic (e.g., email, bulletin boards, chat rooms)
c. Seeks expert opinion through a variety of mechanisms (e.g., interviews, email, listservs)

7. The information literate student determines whether the initial query should be revised.

Outcomes Include:

a. Determines if original information need has been satisfied or if additional information is needed
b. Reviews search strategy and incorporates additional concepts as necessary
c. Reviews information retrieval sources used and expands to include others as needed

Standard Four

The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

Performance Indicators:

1. The information literate student applies new and prior information to the planning and creation of a particular product or performance.

Outcomes Include:

a. Organizes the content in a manner that supports the purposes and format of the product or performance (e.g. outlines, drafts, storyboards)
b. Articulates knowledge and skills transferred from prior experiences to planning and creating the product or performance
c. Integrates the new and prior information, including quotations and paraphrasings, in a manner that supports the purposes of the product or performance
d. Manipulates digital text, images, and data, as needed, transferring them from their original locations and formats to a new context

2. The information literate student revises the development process for the product or performance.

   Outcomes Include:

   a. Maintains a journal or log of activities related to the information seeking, evaluating, and communicating process
   b. Reflects on past successes, failures, and alternative strategies

3. The information literate student communicates the product or performance effectively to others.

   Outcomes Include:

   a. Chooses a communication medium and format that best supports the purposes of the product or performance and the intended audience
   b. Uses a range of information technology applications in creating the product or performance
   c. Incorporates principles of design and communication
   d. Communicates clearly and with a style that supports the purposes of the intended audience

Standard Five

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

Performance Indicators:

1. The information literate student understands many of the ethical, legal and socio-economic issues surrounding information and information technology.

   Outcomes Include:

   a. Identifies and discusses issues related to privacy and security in both the print and electronic environments
   b. Identifies and discusses issues related to free vs. fee-based access to information
   c. Identifies and discusses issues related to censorship and freedom of speech
   d. Demonstrates an understanding of intellectual property, copyright, and fair use of copyrighted material

2. The information literate student follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources.

   Outcomes Include:

   a. Participates in electronic discussions following accepted practices (e.g. "Netiquette")
   b. Uses approved passwords and other forms of ID for access to information resources
   c. Complies with institutional policies on access to information resources
   d. Preserves the integrity of information resources, equipment, systems and facilities
   e. Legally obtains, stores, and disseminates text, data, images, or sounds
   f. Demonstrates an understanding of what constitutes plagiarism and does not represent work attributable to others as his/her own
   g. Demonstrates an understanding of institutional policies related to human subjects research

3. The information literate student acknowledges the use of information sources in communicating the product or performance.

   Outcomes Include:

   a. Selects an appropriate documentation style and uses it consistently to cite sources
   b. Posts permission granted notices, as needed, for copyrighted material

APPENDIX B
INFORMATION LITERACY STANDARDS
COUNCIL OF AUSTRALIAN UNIVERSITY LIBRARIANS

STANDARDS

1. THE INFORMATION LITERATE PERSON RECOGNISES THE NEED FOR INFORMATION AND DETERMINES THE NATURE AND EXTENT OF THE INFORMATION NEEDED

Learning outcomes
The information literate person

1.1 defines and articulates the information need
- explores general information sources to increase familiarity with the topic
- identifies key concepts and terms in order to formulate and focus questions
- defines or modifies the information need to achieve a manageable focus
- may confer with others to identify a research topic or other information need

1.2 understands the purpose, scope and appropriateness of a variety of information sources
- understands how information is organised and disseminated, recognising the context of the topic in the discipline
- differentiates between, and values, the variety of potential sources of information
- identifies the intended purpose and audience of potential resources eg popular vs scholarly, current vs historical
- differentiates between primary and secondary sources, recognising how their use and importance vary with each discipline

1.3 re-evaluates the nature and extent of the information need
- reviews the initial information need to clarify, revise, or refine the question
- articulates and uses criteria to make information decisions and choices

1.4 uses diverse sources of information to inform decisions
- understands that different sources will present different perspectives
- uses a range of sources to understand the issues
- uses information for decision making and problem solving

2. THE INFORMATION LITERATE PERSON FINDS NEEDED INFORMATION EFFECTIVELY AND EFFICIENTLY

Learning outcomes
The information literate person

2.1 selects the most appropriate methods or tools for finding information
- identifies appropriate investigative methods eg laboratory experiment, simulation, fieldwork
- investigates benefits and applicability of various investigative methods
- investigates the scope, content, and organisation of information access tools

• consults with librarians and other information professionals to help identify information access tools

2.2 constructs and implements effective search strategies

• develops a search plan appropriate to the investigative method
• identifies keywords, synonyms and related terms for the information needed
• selects appropriate controlled vocabulary or a classification specific to the discipline or information access tools
• constructs and implements a search strategy using appropriate commands
• implements the search using investigative methodology appropriate to the discipline

2.3 obtains information using appropriate methods

• uses various information access tools to retrieve information in a variety of formats
• uses appropriate services to retrieve information needed eg document delivery, professional associations, institutional research offices, community resources, experts and practitioners
• uses surveys, letters, interviews, and other forms of inquiry to retrieve primary information

2.4 keeps up to date with information sources, information technologies, information access tools and investigative methods

• maintains awareness of changes in information and communications technology
• uses alert/current awareness services
• subscribes to listservs and discussion groups
• habitually browses print and electronic sources

3. The information literate person critically evaluates information and the information seeking process

Learning outcomes

The information literate person

3.1 assesses the usefulness and relevance of the information obtained

• assesses the quantity, quality, and relevance of the search results to determine wether alternative information access tools or investigative methods should be utilised
• identifies gaps in the information retrieved and determines if the search strategy should be revised
• repeats the search using the revised strategy as necessary

3.2 defines and applies criteria for evaluating information

• examines and compares information from various sources to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias
• analyses the structure and logic of supporting arguments or methods
• recognises and questions prejudice, deception, or manipulation
• recognises the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information
• recognises and understands own biases and cultural context

3.3 reflects on the information seeking process and revises search strategies as necessary

- determines if original information need has been satisfied or if additional information is needed
- reviews the search strategy
- reviews information access tools used and expands to include others as needed
- recognises that the information search process is evolutionary and nonlinear

4. The information literate person manages information collected or generated

Learning outcomes

The information literate person

4.1 records information and its sources

- organises the content in a manner that supports the purposes and format of the product eg outlines, drafts, storyboards
- differentiates between the types of sources cited and understands the elements and correct citation style for a wide range of resources
- records all pertinent citation information for future reference and retrieval

4.2 organises (orders/classifies/stores) information

- compiles references in the required bibliographic format
- creates a system for organising and managing the information obtained eg EndNote, card files

5. The information literate person applies prior and new information to construct new concepts or create new understandings

Learning outcomes

The information literate person

5.1 compares and integrates new understandings with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information

- determines whether information satisfies the research or other information need and whether the information contradicts or verifies information used from other sources
- recognises interrelationships between concepts and draws conclusions based upon information gathered
- selects information that provides evidence for the topic and summarises the main ideas extracted from the information gathered
- understands that information and knowledge in any discipline is in part a social construction and is subject to change as a result of ongoing dialogue and research
- extends initial synthesis at a higher level of abstraction to construct new hypotheses

5.2 communicates knowledge and new understandings effectively

- chooses a communication medium and format that best supports the purposes of the product and the intended audience
- uses a range of appropriate information technology applications in creating the product
- incorporates principles of design and communication appropriate to the environment
- communicates clearly and in a style to support the purposes of the intended audience

6. The information literate person uses information with understanding and acknowledges cultural, ethical, economic, legal, and social issues surrounding the use of information

Learning outcomes

The information literate person

6.1 acknowledges cultural, ethical, and socioeconomic issues related to access to, and use of, information

- identifies and can articulate issues related to privacy and security in the print and electronic environments
- identifies and understands issues related to censorship and freedom of speech
- understands and respects Indigenous and multicultural perspectives of using information

6.2 recognises that information is underpinned by values and beliefs

- identifies whether there are differing values that underpin new information or whether information has implications for personal values and beliefs
- applies reasoning to determine whether to incorporate or reject viewpoints encountered
- maintains an internally coherent set of values informed by knowledge and experience

6.3 conforms with conventions and etiquette related to access to, and use of, information

- demonstrates an understanding of what constitutes plagiarism and correctly acknowledges the work and ideas of others
- participates in electronic discussions following accepted practices eg Netiquette

6.4 legally obtains, stores, and disseminates text, data, images, or sounds

- understands fair dealing in respect of the acquisition and dissemination of educational and research materials
- respects the access rights of all users and does not damage information resources
- obtains, stores, and disseminates text, data, images, or sounds in a legal manner
- demonstrates an understanding of intellectual property, copyright and fair use of copyrighted material

APPENDIX C
SOME INFORMATION LITERACY PROGRAMS AT HIGHER EDUCATION INSTITUTIONS

	Institute	Target students	Course / field	Assessment activities
Armstrong 2003	University of Cincinnati	1st years	Research skills	Pre- & post survey
Armstrong 2006	University Illinois	Undergraduates	Doing research Online searching	On line tutorial
Arnold & Anderson 1998	Western Michigan University	1st years	WWW as additional information source	Assignments
Atkins 2002	University Cape Town	Honours	Internet research skills	Pre- & post survey
Balas 2003	University of Texas	All	Information literacy tutorial (TILT)	On line exercises
Barnhart-Park & Carpenter 2002	Lafayette College	Second years	IL Integrated with English	Exercises & assignments
Bernnard & Jacobson 2001	University of Albany	Second years	Information literacy	Credited Exercises & research project
Bothma & Britz 2000	University of Pretoria	All	Information science	Credited
Brower 2004	Buffalo university	Health Science students	Information management	Course-related
Buchanan, Luck & Jones 2002	Austin Peay State University	Undergraduates	Multimedia literacy	Annotations, assignments, surveys & exam questions
Christensen 2004	St Olaf College	All students over various years	Integrated in more than one music course	Assignments
Clay, Harlan & Swanson 2001	California State University	All majors & levels	Information competence project Web-based tutorials	Projects
Comer 2003	Oberlin College	Lower-level undergraduates	Web-based IL tutorial	Pre & post test Qualitative questionnaire
Conteh-Morgan 2001	Ohio State University	English second language students	Integrated information literacy	Credited
Davidson, McMiller & Maughan 2002	Oregon State University	All	Integrated into various disciplines	Benchmarks selected for Comparison
De Jager & Nassimbeni 1998	Cape Technikon	1st years	Integrated 1st year experience	Credited
De Jager & Nassimbeni	University of Cape Town	All students	Information tools and skills	Credited

1998				
DeMars, Cameron & Erwin 2003	James Madison University	All 1st years	Find & evaluate Information	Computer-administrated wed-based test - information skills
Donaldson 2000	Seneca College	1st years	Library resources & research skills	Hands-on exercises, assignments
Dorner 2003	Lewis & Clark College	1st years	IL core course Inventing America	Multi-choice test to determine baseline skills
Dunn 2002	California State University	All	IL Integrated into all disciplines	Quantitative survey Qualitative – information seeking behaviour
East 2005	University Queensland	Post graduates Arts & Humanities	Syllabus	Examination
Feldmann 2003	Indiana University	All freshmen	Speech communication	Pre & post survey
Fiegen 2002	California State University	Beginning students	Undergraduate business courses	Learning outcomes aligned with Information literacy standards
Forsyth & Legge 2000	La Trobe University	All	Integrated into Applied Science	Group research
Franks 2003	Highline Community College	Undergraduates	Education 101	Assignment with rubrics
Gaus & Kinkema 2003	Western State College	All undergraduates	Integrated into all disciplines	Assignments
Hearn 2006	Daniel Webster Colleges, USA	1st t years	Embedded librarian English	Academic essays
Jacobson 2004	University of Albany	1st years	Information literacy as core general education program	Credited
Jacobson & Mark 2000	University of Albany	1st years	Project Renaissance	Credited Pre & post tests
Jacobson & Mark 2000	Messiah College	1st years	Information literacy seminars	Credited Assignments
Johnson & Webber 2003	Strathclyde University	Compulsory business school students	Information seeking & communication skills	Credited
Kivel 2003	Diablo Valley College	Undergraduates	Information competency	Proficiency exam
Knight 2003	University of the Pacific	All undergraduates	Contemporary world issues	Literature review & bibliographies
Kobritz 2003	Tomkins Cortland Community	Undergraduates	Infused in every program	Survey

	university			
MacDonald, Rathemacher & Burkhardt 2000	University Rhode Island	LIB 140	Special topics in information literacy - subject area	Credited
MacDonald, Rathemacher & Burkhardt 2000	University Rhode Island	LIB 120	Introduction to information literacy	Credited
Machet 2005	University of South Africa	Chemistry & Further Education Undergraduate & postgraduate	Research information skills	Credited
Machet & Behrens 2000	University of South Africa	1st years	Information literacy	Credited
Machet & Behrens 2000	University of South Africa	1st years	Personal information retrieval	Credited
Matoush 2006	San Jose State University, California	1st years English Department	Info Power	On line tutorial
Matoush 2006	San Jose State University, California	Incoming students	Stairway to success	Tutorial
Prozesky 1999	University of Natal	2nd years agricultural	Information retrieval skills	Formal evaluation
Rawlins 1999	Technikon Natal	1st years	User education	Affective evaluation
Roberts 2003	Alfred University	1st years	Information literacy TILT Board	Assignments
Roberts 2003	Western Michigan University	1st years	Searchpath	Assignments
Rockman 2004(c)	University of Washington	All 1st years	Information literacy [UWILL]	Credited
Rogers & Abbott 2000	Griffith University	All 1st years	Library research tutorial	Self-testing activities
Roselle 1997	University Botswana	Senior nursing Students	Information literacy skills	Pre- & post surveys
Salisbury & Peacock 2000	Queensland University of Technology	Voluntary	Generic information literacy	Credited
Samson & Millet 2003	University of Montana	1st years	English composition & public speaking	Credited
Schroeder 2003	Spokane Falls Community College	Undergraduates	Bibliographic instruction, library research & Internet issues	College outcome
Stec 2006	Rutgers University, New Jersey	1st years	Shaping a life (SAL)	Use of research resources
Sult & Mills 2006	University Arizona	Undergraduates	English composition	Academic essays
Thompson 1999	University of Pretoria	Undergraduates	Information literacy	Electronic multiple choice, matching concepts and

				definitions and true/false questions
Varner, Schwartz & George 1996	Illinois State University	1st years	Foundations of inquiry	Credited gateway course
Warmkessel 2003	Millersville University of Pennsylvania	Freshmen	Reconciling new knowledge with prior knowledge	Grading rubric
Willilams & Ondrusek 2003	Hunter College	Undergraduates	Research methods	Annotated bibliography
www.sun.ac.za	University Stellenbosch	1st years	Information literacy	Credited
Yi 2001	California State University Bakersfield	1st years	Integrated in English 110	Part of credited course
Yi 2001	California State University San Marcos	1st years	General education : life long learning & information literacy	Part of credited course