

**INFORMATION AND COMMUNICATION
TECHNOLOGY (ICT) KNOWLEDGE AND
SKILLS OF SUBJECT LIBRARIANS AT THE
UNIVERSITY LIBRARIES OF KWAZULU-NATAL**

by

Ruth Geraldine Melonie Hoskins

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Sciences, University of Natal, Pietermaritzburg.**

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Dedication

This thesis is dedicated to my parents Percival and Geraldine Hoskins.

Declaration

The author hereby declares that the contents of this dissertation, unless specifically indicated to the contrary, are her own work, and that the dissertation has not been submitted simultaneously or, at any other time, for another degree.

A handwritten signature in black ink, appearing to read 'Ruth Hoskins', with a stylized flourish at the end.

Ruth Geraldine Melonie Hoskins

Abstract

The study is based on the assumption that there is an underutilisation of ICT resources in the university libraries of KwaZulu-Natal amongst subject librarians due to a lack of appropriate ICT knowledge and skills. The subject librarian's role has changed rapidly in recent years, in response to new forms of information and new methods of teaching and learning. Therefore, for subject librarians to perform their roles effectively and efficiently in such a demanding electronic environment they will need the necessary ICT knowledge and skills, that is, they will have to be computer literate. Also, the explosion of electronic information requires subject librarians to continuously update their knowledge and skills.

A study population consisting of 43 subject librarians, in the university libraries of the Universities of Durban-Westville, Natal (Durban and Pietermaritzburg), and Zululand were surveyed by means of a mailed questionnaire to establish in what ways the subject librarians were using ICT, what the level of ICT knowledge and skill was amongst the subject librarians, what the ICT education and staff training and development needs were amongst the subject librarians and what problems the subject librarians faced in the use of ICT. A total of 31 subject librarians (representing 72.1 %) responded. Results were analysed in terms of frequency of responses. Results are graphically displayed in the form of pie charts and tables.

Interpretation of the results reveals a low level of ICT knowledge and skill amongst subject librarians and a general lack of formal training for ICT amongst the subject librarians. Problems experienced by subject librarians were the result of a lack of ICT knowledge and skills and training. Recommendations for ICT education and staff training and development are made in light of the results of the survey and the literature review.

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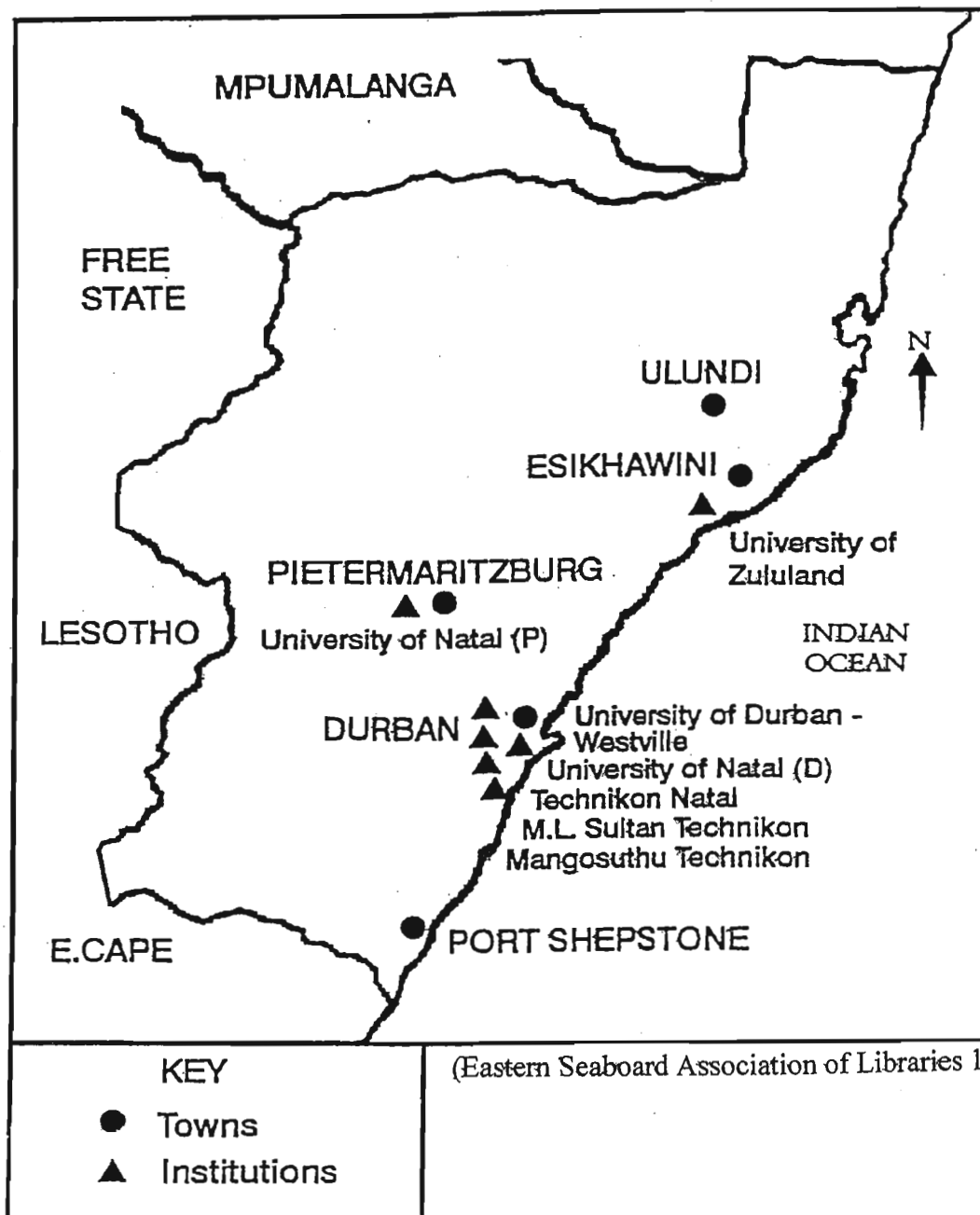
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Map showing area covered by study



List of acronyms and abbreviations

ALA	American Library Association
ASCII	American Standard Code for Information Interchange
AUDIS	Advanced University Diploma in Library and Information Studies
B.Bibl.	Bachelor of Library Science degree
B. Bibl. (Hons)	Bachelor of Library Science Honours degree
C&IT	Communication and Information Technology
CALICO	Cape Library Cooperative
CEPIS	Council of European Professional Informatics Societies
CCSA	Computer Society of South Africa
CD	Compact Disk
CD-ROM	Compact Disk Read Only Memory

CGI	Common Gateway Interface
CPD	Continuing Professional Development
CPU	Central Processing Unit
DOS	Disk Operating System
E-mail	Electronic mail
ECDL	European Computer Driving Licence
ECDL-F	European Computer Driving Licence Foundation
esAL	Eastern Seaboard Association of Libraries
esATI	Eastern Seaboard Association of Tertiary Institutions
EU	European Union
FAQs	Frequently Asked Questions
FRELICO	Free State Libraries and Information Consortium
GAELIC	Gauteng and Environs Library Consortium

HAI	Historically Advantaged Institution
HDI	Historically Disadvantaged Institutions
HDLS	Higher Diploma in Library Science
HTML	Hyper Text Markup Language
ICDL	International Computer Driving Licence
ICT	Information and Communication Technology
IAU	International Association of Universities
IT	Information Technology
ITD	Information Technology Division
LANs	Local Area Networks
LIS	Library and Information Services or Science (depending on context)
M.Bibl.	Bachelor of Library Science Masters degree

M.L.I.S.	Master of Library and Information Science
MLST	ML Sultan Technikon
MT	Mangosuthu Technikon
NDLIS	National Diploma in Library Science
NRF	National Research Foundation
NT	Technikon Natal
NWG	National Working Group of the Department of Education
OCLC	Online Computer Library Center
OPACs	Online Public Access Catalogues
PC	Personal Computer
PDF	Portable Display Format
PDIM	Postgraduate Diploma in Information Management
RAU	Rand Afrikaans University

SABINET	South African Bibliographic Information Network
SARS	South African Revenue Services
SEALS	South Eastern Academic Libraries System
SETAs	Sector Education and Training Authorities
SGML	Standard Generalized Markup Language
TSA	Technikon Southern Africa
UCT	University of Cape Town
UDW	University of Durban-Westville
UN	University of Natal
UND	University of Natal, Durban
UNINET-ZA	South African Universities Internet Network
UNISA	University of South Africa
UniZUL	University of Zululand

UNP	University of Natal, Pietermaritzburg
URICA	Universal Real-time Information Control Administration
URL	Uniform Resource Locator
WANs	Wide Area Networks
WGLET	Working Group on Libraries and Information Technology (of the National Commission on Higher Education)
WITS	University of Witwatersrand
WWW	World Wide Web

Chapter 1

Introduction

The subject librarian's role is far from being static. It has changed rapidly in recent years, in response to new forms of information and new methods of teaching and learning. Increased student numbers have spread existing subject staff more thinly; widening modes of access have brought in more part time students; more student centred learning demands a greater range of teaching skills; and the explosion of electronic information (from CD-ROM (Compact Disk Read Only Memory) to the Internet) requires continuous updating of knowledge and skills (Bluck 1996: 97). Convergence between libraries and computer centres may also broaden the academic liaison role to include the information communication technology (ICT) needs of students and staff.

Furthermore, user expectations of the ability of a library service to deliver high quality services are growing. Linked to user demands for services is the influence of information technology. Students, for example, are becoming more computer literate and the academic library environment has changed substantially in the increased variety of technology on offer, which can be used as channels for its service delivery. The subject librarian has become more of a consultant in information services and many users want to conduct at least, some of their searches from their own workstations (Viljoen and Underwood 1997: 47). If users want to be more independent in their search for information, user education in the use of information systems and databases is very important. This implies that subject libraries will have to have the necessary ICT knowledge and skills before they can impart them to their users. This view is supported by Bluck (1996: 98) who argues that:

...the changes due to new technology and information systems mean that all subject/information librarians will be expected to master "navigational skills" to get through electronic databases and show others how to do so.

Also, continued financial constraints have placed greater pressure on collection development policies, and given impetus to the move towards more networked information in electronic format. Therefore, for subject librarians to perform their roles effectively and efficiently in such a demanding electronic environment they will have to have the necessary ICT knowledge and skills and therefore will have to be computer literate.

According to Kershner (2000: 395) a computer literate person is one who has acquired the skills needed to use computers effectively. More important, the computer literate person is comfortable in the computer age. Familiarity, experience, and understanding create comfort. Kershner (2000: 396) argues that computer literacy has five characteristics:

- The ability to use the computer as a tool for problem solving.
- An understanding of what computers can and cannot do (the function of hardware and software).
- Non-technical experience with computer software.
- Experience in using the Internet, particularly the World Wide Web (WWW), as an information-gathering tool.
- The ability to evaluate the societal impact of computers.
- Technical expertise is not required.

The computer literate person therefore should have experience with computer software tools for writing, communicating, and processing information. A person who is computer literate should be comfortable sending and receiving electronic mail and using a browser to search the WWW.

1.1 The problem

This section deals with a description of the problem.

1.1.1 Description of the problem

The research problem is essentially the topic to be investigated, or what needs to be known. It is assumed that one plans a research study because one has identified some problem worthy of investigation (Powell 1985: 19). The problem to be investigated in this study is the level of ICT knowledge and skills amongst subject librarians in the KwaZulu-Natal university libraries of the University of Natal, Pietermaritzburg (UNP), University of Natal, Durban (UND) (which includes the Medical School and Edgewood), the University of Durban-Westville (UDW) and the University of Zululand (UniZUL). Underutilization of ICT resources may be due to a lack of knowledge and/or appropriate skills, to use the available ICT to their full potential. Therefore, the potential benefits and advantages of these ICT resources are not realized.

1.2 The purpose of the study

Since the research problem is what the research is about, the purpose of the study is therefore the reason why the research is conducted (Powell 1985: 22). The purpose of this study is to investigate the information and communications technology (ICT) knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal.

1.2.1 The research objectives

Based on the above-mentioned purpose, the specific objectives of the study are:

- i) To investigate the ways in which the subject librarians are using ICT.
- ii) To establish the level of ICT knowledge and skills amongst the subject librarians.
- iii) To identify the ICT education and staff training and development needs amongst the subject librarians.
- iv) To identify the problems the subject librarians face in the use of ICT.

1.2.2 The research questions

The following research questions therefore guided the conduct of this study:

- i) In what ways are the subject librarians under study using ICT?
- ii) What is the level of ICT knowledge and skill amongst the subject librarians?
- iii) What are the ICT education and staff training and development needs of the subject librarians?
- iv) What problems do the subject librarians face in the use of ICT?

1.2.3 Justification for the study

Adopting ICT is an expensive undertaking and commitment by libraries, especially with the constant development of ICT. There are many challenges facing libraries in South Africa. The decrease in the buying power of the Rand in South Africa has resulted in ever-dwindling library budgets (Viljoen and Underwood 1997). Therefore, the benefits of existing ICT resources can only be realized with the appropriate knowledge and skills to use them.

Except for the studies conducted by Kaniki (1996; 1999) and the National Research Foundation Focus Area on ICT and the Information Society in South Africa, very few studies have focused on the use of ICT in this region. The results of this study could be useful to other university libraries in South Africa, particularly with regard to the establishment of what ICT knowledge and skills are required by subject librarians in order to perform their work effectively and efficiently. Furthermore, an understanding of the existing use of ICT resources could eventually assist in resource sharing at a regional level, in terms of knowing what human and material resources are available in each institution's library. Finally, the Minister of Education has indicated that a merger between the University of Natal and the University of Durban-Westville will take place (Department of Education 2002). This makes such a study more important in terms of an understanding of the existing use of ICT and the knowledge and skills that are available.

1.2.4 Scope and limits of the study

This study is confined to the six university libraries in KwaZulu-Natal province of South Africa. These are all academic libraries that belong to the esAL (Eastern Seaboard Association of Libraries) consortium. Other academic and research libraries such as the college and technikon libraries in the province, which are also members of esAL, are excluded from this study. The ideal would be to include all college, technikon and university libraries but this would be too large a task for the requirements of this level of research for a Coursework Masters.

The study does not target all library staff in the six libraries. The study targets only subject librarians, namely, those staff

who interact with students and staff, either in the form of one or a combination of answering reference queries, bibliographic instruction, faculty or (academic) department liaison such as collection development or cooperative cataloguing etc (Kaniki 1996).

The study is limited to the use of personal computers. The use of other ICT resources such as telephones, fax machines and so on, are excluded from this study.

1.2.5 Definitions of terms used in the study

For the purpose of this study, the following key terms used, are defined as follows:

1.2.5.1 ICT

According to the *Oxford English dictionary*, the first recorded use of the term *information technology* was in 1958 when Leavit and Whistler wrote in the *Harvard Business Review* (XXXVI 41/1): "The new technology does not have a single established name. We shall call it *information technology*" (Keary 2000: 868).

Information and communication technology, the wording currently in favour – replacing the older 'IT' and the briefly fashionable Communication and Information Technology (C&IT) – to express the combination of computing hardware and software with the capabilities of communications networks that provides new opportunities for

teaching, learning and training through the delivery of digital content. The expression is used particularly in an educational context (Prytherch 2000:357).

Feather and Sturges (1997: 220) define information technology (IT) as the electronic technologies for collecting, storing, processing and communicating information. There are two main categories: those, which process information, such as computer systems; and those, which disseminate information, such as telecommunication systems. The term can generally be understood to describe systems that combine both.

According to Easingwood (2000:45) the recent change in terminology from IT to ICT reflects a subtle yet distinct change in approach to what the use of the new technologies really means. The former term suggested that there was a one-way flow of information with the user being a passive recipient of material displayed on the screen. The adding of the word 'communication' implies a more dynamic interaction between the user and the world of information contained beyond the computer screen. As a result of this, the computer has evolved from being a teaching machine to being a tool to support learning and ultimately into a means of instigating communication from a local to a global scale. Information technology comprises three interlocking components. These are:

- i) Computers: hardware, programs and information.
- ii) Communications: hardware, programs and information.
- iii) *Know-how*: people, applications and procedures (Senn 1997: 14)

These three components of information technology are inseparable. Computers and communications are of little use without *know-how* (Senn 1997: 14).

Therefore, information technology refers to a wide variety of items and abilities used in the creation, storage, and dispersal of data and information as well as in the creation of knowledge. *Data* are raw facts, figures, and details. *Information* refers to an organized, meaningful interpretation of data, while *knowledge* is the awareness and understanding of a set of information and how that information can be put to best use

(Senn 1997: 12). This study uses both the terms IT and ICT as reflected in the literature.

1.2.5.2 Knowledge

Hawes and Hawes (1982: 126) define knowledge as the aggregate of facts, information, and principles that an individual has acquired through learning and experience; formal education seeks to raise levels of knowledge systematically. Therefore, knowledge may be described as the *know-how* to perform certain tasks and functions.

1.2.5.3 Skill

According to Hawes and Hawes (1982: 207) skill is the well-developed capability of any kind, including intellectual, physical, or artistic capabilities. Therefore, skill may be described as the ability to perform certain tasks and functions effectively.

Senn (1997: 20) defines *know-how* as the capability to do something well. Senn (1997) argues that information technology is only as good as the user's *know-how*. In other words, you have to *know-how* to explore and take advantage of the opportunities technology creates.

Information technology *know-how* consists of:

- Familiarity with the tools of IT.
- Possession of the skills needed to use these tools.
- An understanding of when to use IT to solve a problem or to capitalize on an opportunity (Senn 1997: 20).

1.2.5.4 Subject librarian

Allowing for considerable variation between institutions and between subjects, a subject librarian is a librarian whose role centres on four main areas: academic liaison, collection development, information skills teaching and enquiry or reference work (Bluck 1996: 94). For the purposes of this study the definition used by Kaniki (1996) of a subject librarian will be adopted, namely, subject librarians are library staff

who interact with students and staff, either in the form of one or a combination of answering reference queries, bibliographic instruction, faculty or (academic) department liaison such as collection development or cooperative cataloguing etc.

1.2.6 Structure of the study

Having outlined the research problem, the purpose and limitations of the study, the next chapter will provide the background to the study. The literature relevant to the study is reviewed in Chapter 3, the research methods used for the study are explained in Chapter 4 and the results described in Chapter 5. Interpretation of the results follows in the next chapter and the final chapter deals with recommendations and conclusions. Appendices are situated after the list of works cited.

1.3 Summary

In this introduction, the problem with which the study concerns itself has been articulated and the purpose of the study, including its justification and the scope and limits has been described. Brief definitions of terms used in the study have been provided and the structure of the study briefly delineated.

Chapter 2

Background to the study

Aspects of the environment in which the present study is situated are examined in this chapter in order to provide the context for the study. The aspects that are discussed are: tertiary institutions in KwaZulu-Natal, the Eastern Seaboard Association of Tertiary Institutions (esATI), esAL, the university libraries of KwaZulu-Natal, the restructuring and transformation of the higher education system in South Africa by the Department of Education¹, library support programmes to the esAL libraries, ICT and information society in South Africa, ICT and higher education in South Africa and the education and staff training and development of academic librarians.

2.1 Tertiary institutions in KwaZulu-Natal

esAL is a constituent part of esATI, and consists of nine library sites belonging to six tertiary institutions. Its region is home to over eight million people, who constitute a quarter of the entire population of South Africa. One half of the region's people live in rural areas, while in terms of age structures, just over half are twenty years of age or younger. The tertiary institutions in the region have a total registration of sixty thousand students. A further thirty-five thousand students in the region are registered with distance learning organisations and many use the library facilities of the six regionally based institutions. The net effect is that the libraries of the local institutions have a potential student base of over ninety thousand students (Eastern Seaboard Association of Libraries 1998: 3).

Of the six institutions in the region, four are historically disadvantaged and have library facilities, which are far from adequate to meeting the needs of the students and staff users. Attempts to raise holdings and service levels in those libraries will cost

¹ All references to the Department of Education are to the South African department.

millions of Rands. In addition, severe structural disadvantages, the product of apartheid practice in higher education, characterizes almost every facet of all institutions. Structural disadvantages vary from size of staffing establishment and skill of staff through to the adequacy of physical facilities (Eastern Seaboard Association of Libraries 1998: 3).

2.2 Eastern Seaboard Association of Tertiary Institutions (esATI)

esATI is an inter-institutional co-operative venture aimed at fostering a coherent system of higher education in the eastern seaboard region of South Africa. It is committed to the delivery of excellence in education and the redress of historical inequalities. Its members are:

University of Durban-Westville (UDW)

University of Natal (UN)

University of South Africa (UNISA)

University of Zululand (UniZul)

Mangosuthu Technikon (MT)

ML Sultan Technikon (MLST)

Technikon Natal (NT)

Technikon Southern Africa (TSA) (Eastern Seaboard Association of Libraries 1998: 5)

Two of these institutions, namely UNISA and TSA, have their headquarters in Gauteng, and their libraries are therefore members of Gauteng and Environs Library Consortium (GAELIC). For these reasons their local offices are not members of esAL. ML Sultan Technikon and Natal Technikon have merged to form the Durban Institute of Technology with effect from the 1 April 2002 in accordance with the Ministry of Education's proposals regarding the restructuring and transformation of the higher education system in South Africa (Department of Education 2002). The

Ministry of Education has also decreed a merger between the University of Durban-Westville and the University of Natal (Department of Education 2002). The merger between these two institutions is discussed in more detail in section 2.5.

2.3 Eastern Seaboard Association of Libraries (esAL)

esAL is a co-operative of seven academic libraries (belonging to six institutions) in the province of KwaZulu-Natal on the eastern seaboard of South Africa. See Map (p. xv). The objective of esAL is to promote the optimal use of resources at all partner institutions and to create a strong research resource in the region. esAL operates under the auspices of esATI. A formal agreement exists among the esAL libraries relating to the mutual rendering of support and services for the broadening of access to information through the sharing of resources, technology, information management and expertise in the field of library and information services. This formal agreement was signed by both the Chief Librarian and Vice-Chancellor of each of the esATI institutions (Eastern Seaboard Association of Libraries 1998: 5).

2.4 The University Libraries of KwaZulu-Natal

A brief history of the establishment of the University libraries of KwaZulu-Natal and their branch libraries together with each library's mission statement is provided in this section.

2.4.1 The University of Durban-Westville Library

The libraries of the University of Durban-Westville consist of a main library and a branch library, the Joe Ryan Library.

2.4.1.1 The mission statement of the University of Durban-Westville Library

The mission of the library is to collect and disseminate information to students, research and academic staff through printed and electronic means in support of the teaching, research and community outreach functions of the university. It further subscribes to the university's mission for academic excellence and contribution to the development of a just South African society (Authar 2002).

2.4.1.2 Libraries of the University of Durban-Westville

The Library of the University of Durban-Westville, known as University College, Durban, until December 1970, was established in 1961. When the University moved to its new campus in Westville in 1972, the library was temporarily housed in the ground floor of the cafeteria. The Library moved into its existing building in 1974. In March 1981 the library installed a dedicated mini-computer, which through the Universal Real-time Information Control Administration (URICA) system, provides for an integrated computerised library system (State Library 1990: 313). The library serves the needs of the staff and students of the University of Durban-Westville.

The Joe Ryan Library was established in 1981 as a branch library of the main University Library. The Joe Ryan library services the Faculty of Dentistry and the Oral and Dental Training Hospital. The Library is situated at the King George V Hospital complex in Sydenham, which is eight kilometers from the main campus of the University of Durban-Westville (Sentoo 1994: 6-7).

2.4.2 The University of Natal Libraries

The libraries of the University of Natal consist of the University of Natal, Durban Library and the University of Natal, Pietermaritzburg Library.

2.4.2.1 The mission statement and vision of the University of Natal Libraries

In terms of the mission, the libraries of the University of Natal provide resources and information services to support the learning, teaching, research and development endeavours of the University community.

The vision of the libraries is as follows: In support of the University's strategy of quality with equity, the Libraries will have balanced collections and access to current information services to encourage excellence in learning, teaching and research, facilitated by innovative and resourceful library staff who are also dedicated to empowering learners to equip themselves for life-long learning (University of Natal 2002b).

2.4.2.2 Libraries of the University of Natal, Durban

The Library was established in 1936 and important structural changes were made in 1959 (Main Library) and 1967 (Medical Library) (State Library 1990: 314). The new main library, the E G Malherbe Library was opened in May 1988. It is located in the centre of the Durban campus and serves the needs of staff and students of the Faculties of Community and Development Disciplines, Engineering, Human Sciences, Management Studies and Science (University of Natal 2002a). In 1983, the library was computerised and the Dobis/Libis library system was used. However, this system was problematic and in 1989 the library converted to the URICA library system (University of Natal 1991: 11). Studies relating to the libraries on the Howard College Campus of the University of Natal, Durban include a study by Shah (1995).

The Barrie Biermann Architecture Branch Library was established in 1969. The library is located in the Shepstone Building and serves the needs of the staff and students of the School of Architecture, Planning and Housing and the School of Civil Engineering, Surveying and Construction.

The E S Edminson Branch Library was established in 1980; it was named in honour of Mr E S Edminson, Rector of Edgewood College from 1969 to 1974. It is located on the Edgewood Campus of the University at Pinetown, and serves the needs of the staff and students of the School of Education, Edgewood.

The G M J Sweeney Law Branch Library was established in 1972. It is located on the ground floor of Howard College and serves the needs of the staff and students of the Faculty of Law.

The Medical Library was established in 1952. The Medical Library is located in the Nelson Mandela School of Health Sciences and serves the needs of the staff and students of the School of Health Sciences. The Medical Library is located at 719 Umbilo Road, Durban, South Africa. A study relating to the Medical Library includes one by Haffajee (1982).

The Eleanor Bonnar Music Branch Library was established in 1972. It is situated on the first floor of the Department of Music, 244 King George V Avenue and serves the needs of the staff and students of the Department of Music (University of Natal 2002a).

2.4.2.3 Libraries of the University of Natal, Pietermaritzburg

The Natal University College was established in 1910 and the library was started in 1912. The Library Committee was instituted in 1921 and the first separate library building was occupied in 1937. In 1965 the Library moved into its present building. The University took over the responsibility of the Agriculture Library in April 1973. In 1983 the Agriculture branch library merged with the Biological Sciences to form the Life Sciences Library (State Library 1990: 324). The Main Library caters primary for subjects in the Faculty of Human Sciences and Management and is situated on the Main campus, King Edward Avenue. The Library was computerised in 1982 with the installation of a Reality mini-computer and the URICA integrated systems software (Aitchison 1998: 17).

The Alan Paton Centre which was opened in April 1989, is located in Milner Road, focuses on collections of organisations associated with conflict and conciliation with particular reference to KwaZulu-Natal.

The Law Library is situated on the ground floor of the School of Law, Golf Road and serves the needs of the staff and students of the School of Law.

The Life Sciences Library caters for subjects in the Faculty of Science and Agriculture. The Library is on the 3rd floor, John Bews Building, Carbis Road, situated next to the Agricultural Faculty (University of Natal 2002b).

2.4.3 The University of Zululand Library

2.4.3.1 The mission statement, vision and objectives of the University of Zululand Library

The mission of the University of Zululand Library is to serve the teaching, learning and research functions of the University of Zululand, as well as the needs of the community in its immediate vicinity who can benefit from it without prejudicing the privileges of its primary clientele (University of Zululand 2002).

The vision of the library is as follows: Provision of academic information excellence in respective of discipline.

The objectives of the University of Zululand library are:

- To augment the collection of the University Library by acquiring, preserving and making available relevant resources of information;
- To offer instruction to clients in the use of the library resources in order to equip them with information literacy skills for life-long learning;

- To maintain and provide quality services which promote the instructional, research and extension functions of the University (University of Zululand 2002).

2.4.3.2 Libraries of the University of Zululand

The University was established in 1960. While the planning of the University Library was in its initial stages, the collection was housed in several localities. The first new library was opened in 1968. The existing library replaced this building in 1987. Since 1987, subject librarians have been available to assist users. In terms of computerisation, a Reality computer had been in operation since 1981 and was replaced by an Ultimate computer in the Library in 1989 (University of Zululand 1990: 2). A branch library at Umlazi was established in 1979 (State Library 1990: 351).

2.5 The restructuring and transformation of the higher education system in South Africa

The Department of Education (2001; 2002) outlined its proposals to restructure and transform the higher education system in South Africa by merging various tertiary institutions in Transformation and Restructuring: the New Institutional landscape for Higher Education document (gazetted on the 21 June 2002). The merger is part of the broader process for restructuring and transformation of the higher education system to ensure the responsiveness of the higher education system to national human resource and research needs as outlined in the National Plan for Higher Education (gazetted on the 9 March 2001).

The reasons for the merger are as follows:

- Overcoming the apartheid-induced divide between historically white and historically black institutions;
- Promoting staff equity;

- Ensuring the effective and efficient use of resources through reducing overlap and duplication in academic programmes;
- Consolidating existing academic programmes to enable a wider range of academic programmes to be offered in response to regional and national needs; and
- Mitigating the impact of unnecessary competition (Department of Education 2002).

In March 2001 a National Working Group (NWG) was appointed to advise on the restructuring of the institutional landscape of the higher education system. *The restructuring of the higher education system in South Africa: report of the National Working Group* (December 2001) proposed the consolidation of the number of higher education institutions from 36 to 21 (Department of Education 2002: 10). The Ministry based on the explanation and rationale advanced by the NWG report accepted the NWG proposals for KwaZulu-Natal. The Ministry of Education's proposals are thus as follows:

- ML Sultan Technikon and Technikon Natal have merged to form the Durban Institute of Technology, with effect from 1 April 2002.
- Mangosuthu Technikon should be merged with the new Durban Institute of Technology.
- The infrastructure and facilities of Umlazi campus of the University of Zululand, but not the staff and students, should be transferred to the technikon proposed to be established through the merger of Mangosuthu Technikon and the Durban Institute of Technology. Appropriate arrangements should be made for the existing university students to complete their programmes of study.
- The University of Durban-Westville and the University of Natal (including the Pietermaritzburg campus) should be merged.

- The University of Zululand should refocus its mission and become a comprehensive institution offering technikon-type programmes, with its future growth linked to the Richards Bay region (Department of Education 2002: 13).

2.6 Library support programmes to the esAL libraries

There have been two major support programmes to the esAL libraries. They are the European Union Higher Education Libraries Programme and the Andrew W. Mellon Foundation Programme.

2.6.1 The European Union Higher Education Libraries Programme in South Africa

This programme developed as a result of a request sent by the Department of Education to the European Union (EU). The EU had agreed to fund the Programme and the British Council had been contracted to manage it. The Programme targeted the libraries and departments of Library and Information Science of the historically disadvantaged tertiary institutions (HDIs).

The historically disadvantaged universities in KwaZulu-Natal involved in the Programme were):

- University of Durban-Westville
- ML Sultan Technikon
- University of Zululand
- Mangosuthu Technikon (Rothschild 1998:19)

Assistance was offered across four broad areas - textbooks, materials, information technology and human resource development. The subject focus was: science and technology, business and computer studies, engineering and agriculture sciences as well as library and information science. The assistance was given in the form of goods and services, so no institution received funds directly. Because funding came

from the EU, the assistance had to be sourced from South Africa or Europe. Each institution was visited to collect base line data about the current provision and situation in each library and Department of Library Science. The data collected would eventually form part of a working database used by the Programme to develop solutions and monitor the progress of delivery. According to Rothschild (1998:19) the institutions proved to be quite different from each other. Fortunately the Programme was able to take advantage of the current strategic planning initiatives to ensure that its own activities were synergic. This was important for developments in science and technology and research. Through consultation and agreement, relevant projects could also be drawn upon. Activities concentrated on needs analyses for each institution, as well as the exploration of a number of issues that arose out of the visits.

2.6.2 The Andrew W. Mellon Foundation grant to esATI

The Mellon Foundation approved a grant of \$816, 000 in 1999 for the use over approximately two years, towards the costs of creating a shared library system among the six higher education institutions in KwaZulu-Natal. The grant was made in response to a proposal that was submitted in the second half of 1998. The project involved a shared and interactive library system of the same version for the seven tertiary institution libraries in KwaZulu-Natal. This would be achieved by the extension and integration of existing software systems to create a virtual bibliographic database, which would in turn encourage greater resource sharing in the region. The largest component of the project was the purchase of a URICA system for Natal Technikon, given the fact that all the other member libraries were already using URICA. Other libraries were provided with URICA modules they lacked. All libraries received Pentium computers, allowing Windows based WWW access that could connect to the Internet, and thus make use of the virtual bibliographic database via broadcast enquires using the z39.50 protocol. Some libraries also received grants for retrospective data conversion. The following Table A lists the categories and the amounts of funding that each institutions library received (Eastern Seaboard Association of Libraries 1998: 22-38).

Table A. Mellon funding to esAL university libraries

Category of purchase	Durban-Westville	Natal Durban	Natal Pietermaritzburg	Zululand
<i>Server hardware</i>	15280	-	-	-
<i>URICA Inter-Library Loan Module</i>	5700	5700	5700	5700
<i>URICA Serials Module</i>	-	-	10440	10440
<i>Workstations and peripherals</i>	28000	35000	30800	44800
<i>Retrospective cataloguing</i>	-	24000	20000	-
TOTAL (\$)	48980	64700	66940	60940

The amounts above varied for each library depending on their hardware needs. The libraries of the University of Natal were the only ones to request funding for retrospective cataloguing. Thus, if one excludes the libraries of the University of Natal's request for retrospective cataloguing, the libraries of the University of Durban-Westville and the University of Zululand benefited more in terms of funding that provided an improved hardware infrastructure for each library.

2.7 ICT and the information society in South Africa

According to the National Research Foundation (NRF) the convergence of IT and communication technology in the new field of ICT has had a revolutionary impact on the way we do business, live and learn. This convergence has brought about the information age, the knowledge era, the new economy and the information society, all popular concepts in use today. People need basic access to and an understanding of ICT. Not only do people have to understand the rapid evolution of these new ICT, but they also need to keep pace with the radical changes imposed on the social structure at work, at home and in the classroom. It is necessary to shape the South African information society by harnessing the key ICT and skills required for the socio-

economic development of the country. This will ensure that the 'digital divide' does not impact negatively on the country. This understanding needs to take shape within the context of the realities of the country in terms of information literacy. Interfaces between information, technology and society will need to be different:

Human resource development is the most critical area that South Africa faces in the development of its ICT Sector and in stimulating ICT usage in other sectors of South African society and is no different from other countries that have to deal with the global shortage of ICT workers and, in particular, the global immigration of skilled workers.

South Africa, however, faces the more profound challenge of educating, training and integrating a large proportion of its population who were previously denied the opportunity to move into the emerging information society (National Research Foundation 2002).

ICT can be regarded as both a driver and an enabler. According to the National Research Foundation (2002) if South Africa does not become a major player in ICT, the country will find it difficult to be competitive. There is a need by South Africans to be part of the information society, to be globally competitive, to play their rightful role in the region and to benefit as individuals. Access to information and awareness of the possibilities of the effective use of ICT, form part of this need. Broader online literacy is required, as ICT is becoming a popular functional illiteracy that disempowers people from living effectively in a modern society.

For this reason the NRF established an ICT Focus Area, to address the lack of capacity and critical mass that the country has in ICT specialisation and to recognise the problems created by the high mobility of people with this expertise. The aims of the ICT Focus Area are to:

- Ensure that a critical base of ICT specialists are trained and maintained to effectively contribute to the information needs of industry and society;
- Grow a strong training and research base in academia to make South Africa an attractive international training ground for ICT;
- Generate, design and apply new ICT in an innovative way;

- Develop entrepreneurial skills to take knowledge and skills generated through research into business creation;
- Enable South Africans, through research, to remain dynamic and accommodate the fast-moving changes and developments of this field;
- Form appropriate partnerships to strengthen ICT capability through research capacity building, as well as redress in all sectors;
- Raise the status and understanding of ICT and the use and management of information in all sectors;
- Encourage the private sector, through partnerships and co-funding to invest in scholarships and chairs;
- Make special provision to attract post-doctoral students in ICT to uplift the capacity for research; and
- Promote collaboration between science and engineering and social sciences in ICT (National Research Foundation 2002).

ICT therefore has a major role to play in South Africa becoming part of the information society. This role must be viewed in light of the challenges facing higher education in South Africa.

2.8 ICT and the challenges facing higher education in South Africa

The key challenges facing the South African higher education system are: human resource development, high-level skills training and the production, acquisition and application of new knowledge (Department of Education 2001). These challenges have to be understood in the context of the impact on higher education systems worldwide and the changes associated with the phenomenon of globalisation. The onset of the 21st century has brought changes in social, cultural and economic relations spawned by the revolution in ICT. The impact of these changes on the way in which societies are organised is likely to be far-reaching and fundamental.

At the centre of these changes is the notion that in the 21st century, knowledge and processing of information will be the key driving forces for wealth creation and thus social and economic development (Department of Education 2001).

The role of ICT in advancing the reconstruction and development agenda has been recognised by the government. President Mbeki in his State of the Nation Address at the opening of the 2001 Parliamentary session indicated that the Government is prioritising the development of the telecommunications sector. In this regard, the President announced an important initiative to assist and advise on how South Africa can “get onto and stay on the information super-highway”, namely, the establishment of a Presidential International Task Force on the Information Society and Development (Department of Education 2001).

Furthermore, according to the National Plan for Higher Education (Department of Education 2001), higher education has a critical and central role to play in contributing to the development of an information society in South Africa in terms of skills development and research. Therefore, Manuel Castells, the noted social theorist of the information revolution (and who has agreed to serve on the Presidential International Task Force) has argued,

if knowledge is the electricity of the new informational international economy, then institutions of higher education are the power sources on which a new development process must rely (Castells 1993).

2.9 The education and staff training and development of academic librarians

The education and staff training and development of academic librarians is important since the LIS field is constantly changing due to technological developments. It is important to distinguish between the use of the terms education, training and staff development.

These terms can be defined as follows:

- *Education*: is the development of a broad range of abilities, knowledge and skills of general application.
- *Training*: implies the development of specific skills to prepare individuals to carry out specific tasks effectively.
- *Staff development*: involves a combination of training, education, experience and a variety of other means of increasing personal and indeed, group effectiveness (Effah 1998: 39)

In addition to staff training and development, there is continuing professional development (CPD). According to Parry (1996: 22) CPD is a broad concept that includes staff development, training and personal development. CPD is characterised by a systematic approach to assessing needs, undertaking training or development activities and monitoring outcomes.

Parry (1996) argues that academic libraries trying to maintain services in the face of growing pressure from students, academics staff and management might be expected to be forgiven for putting the development of people lower down the agenda than the development of services, systems and structures. However, one thing that these three elements have in common is people. Even the most automated libraries need people to manage systems, to carry out data entry and to help users, all of which require different skills that must be regularly updated. Even though finding time for staff development and acquiring funds for training or choosing appropriate trainers may be difficult, if staff are not given the opportunity to develop their own abilities, then the service, systems and structures are likely to stagnate and will soon fail to meet the demands placed upon them. The high rate of technological change within the LIS field, the constantly changing demands of users, and the ever-increasing amount of information available, means that subject librarians need to continually update and develop their ICT skills. Therefore, due to the fact that ICT have a profound effect on the way subject librarians perform their tasks, the need for ITC training is imperative in order for staff to perform their tasks effectively and efficiently.

2.9.1 The Skills Development Act, 1998

According to Barry and Norton (2000) parliament passed the Skills Development Act, 1998 (the Act) in the context of high unemployment, grossly unequal distribution of income, inequality of opportunity based on the legacy of apartheid, poverty and low levels of investment in the South African labour market. The purpose of the Act aims to address these features by way of a new set of intuitions and financial schemes. The purpose of the Act is to:

- Develop the skills of the workplace;
- Improve workers' quality of life, prospects of work and labour mobility;
- Improve productivity in the workplace;
- Promote self employment;
- Improve the delivery of social services;
- Increase the levels of investment in education and training in the labour market and improve the return on that investment;
- Encourage employers to use the workplace as a learning environment;
- Encourage workers to participate in learnerships and other training programmes to improve their employment prospects; and
- Help work seekers find work (Barry and Norton 2000: 6).

The Skills Development Levies Act, 1999, is an allied piece of legislation concerned with the financing of the Skills Development Act. From the 1 April 2000, employers, like the universities of KwaZulu-Natal, were obliged to pay a levy of 0.5 % of their payroll to the South African Revenue Services (SARS). This has increased to 1 % from the 1 April 2001. The purpose of this levy is to fund the skills development of employees and unemployed persons. The SARS will distribute 80 % of the levies to the Sector Education and Training Authorities (SETAs) and the remaining 20 % will go to the National Skills Fund.

Employers may reclaim part of the levy if they provided skills training for their workforce. The aim of the levy is to encourage employers who do not offer training

opportunities for their employees (or very little training), to raise the skills level of their employees. The employer's incentive to provide training is to recover a proportion of their levy. In turn the levy rewards employers who currently provide significant skills training to their employees because they may now recover a proportion of their training expenditure. Furthermore, each SETA will make grants available to employers who are able to implement training for specific skills shortages identified by the SETA. An employer may recover:

- 15 % of their levy if they employ or appoint a Skills Development Facilitator;
- 10 % if they prepare a workplace skills plan; and
- 20 % if they implement that plan.

A Skills Development Facilitator is responsible for developing and planning an organisational skills development strategy. The facilitator assists employers and employees to draft and implement their workplace skills plan. These plans must identify and prioritise the training needs in a particular workplace and indicate which employees will receive training.

2.10 Summary

In this chapter, background information that relates to the university libraries of KwaZulu-Natal, the restructuring and transformation of higher education in South Africa, library support programmes to the libraries, ICT and higher education in South Africa and the education and staff training of academic librarians provides the context for the study.

Chapter 3

Literature review

The review of related literature involves the systematic identification, location, and analysis of documents containing information related to the research problem (Gay 1976: 29). Increased use of ICT has greatly influenced the evolution of academic libraries during the last three decades:

Academic libraries are at the centre of a revolution. Phrases like “information economy,” “knowledge industry,” “virtual library,” “national data superhighway,” and “electronic journal” only hint at the magnitude of the changes in information and knowledge production, preservation, and dissemination that are taking place...even though the constituents’ needs have changed and will continue to change.... The librarian may spend less time in the library building and more time in the academic department and may spend his or her time working with the computing and telecommunications staff or communicating with distance learners electronically. The purpose remains the same; the means are ever more powerful, and the possibilities far-reaching (Rice-Lively and Racine 1997: 37).

Libraries in the industrialised world, as a result of developments in computer technology and telecommunication technology, have experienced a significant change in the information world brought about by developments such as virtual reality.

These changes have transformed libraries from storehouses of books and documents to powerhouses of information. They have facilitated the growth of “libraries without walls,” or “limitless libraries,” now properly known as virtual libraries (Mambo 1997: 49). The very existence of such technologies elsewhere implies that any continent, including Africa, has the potential to possess the same. However, there are hurdles, constraints and challenges that are associated with the virtual library. If the central role of academic libraries is to promote and facilitate effective use of recorded information in all formats by all of the library’s users,

then virtual libraries are an essential partner in this exercise because they facilitate access to vast information services.

Therefore, the wide spread use of ICT in libraries, and especially the development and access to digital information resources via the Internet, has raised a number of challenges and concerns for librarians. These include the impact of ICT on the role of librarians and the resulting need for new skills and competencies suitable for the digital information environment. According to Chisenga and Rorissa (2001: 5) the role of librarians in the digital information environment is evolving. In addition to the traditional library and information management skills, librarians are now being expected to possess additional skills and expertise, specifically in the use of ICT, electronic publishing, digital information management and knowledge management. Libraries are no longer seen as “keepers of books”. According to Chisenga and Rorissa (2001) librarians are now following new directions that are as follows:

- From library-centred to information-centred;
- From the library as an institution to the library as an information provider, and the librarian as a skilled information specialist functioning in an all-related information environment;
- From using new technology for the automation of library functions to utilizing technology for the enhancement of information access and delivery of items not physically contained within the walls of the library; and
- From library networking for information provision to area networking for the provision of all types of information (Chisenga and Rorissa 2001:6).

Some countries in Africa are functioning in automated information environments similar to those prevailing in developed countries. For South Africa, virtual libraries are a virtual reality, not only through South African Bibliographic Information Network (SABINET) but also through full access to the Internet via UNINET-ZA, the South African Universities Network (Mambo 1997: 52). Problems and challenges facing the development of virtual libraries in Africa

include technical, administrative and political problems. Administrative problems include issues such as sustainability, training technical staff, inconsistent government funding and more importantly, the attitudes and training of professional staff. According to Mambo (1997: 55) the success of virtual libraries largely depends on the readiness, enthusiasm, and vision of librarians. The training of practicing librarians has been mostly in mainstream librarianship while their knowledge of information technology and computing services is limited. Unless librarians have the understanding of the potential of new ICT, they will not appreciate the value of virtual libraries.

Muddiman (1999) provides a new and wide ranging approach to the many current debates surrounding LIS education. Muddiman (1999) uses the context of postmodernity as a lens. He sees society as complex, fragmented and “postmodern” whereas contemporary LIS education, he argues, remains hooked to “modern” concepts and has become preoccupied with the management of information and knowledge and the associated technologies of performance maximisation (Muddiman 1999: 1). Muddiman (1999: 17) argues for the development of LIS education that is “pluralistic, ‘postmodern’, yet ethically grounded”. Such an education is seen as “relevant to the needs of the networked age, but nevertheless grounded in both intellectual enquiry and social responsibility”. Muddiman (1999) envisions a postmodern library that will focus on the individual’s ability to access and create knowledge rather than its societal ordering and institutionalisation. He argues for increasingly flexible technologies, which empower users and provide access to a limitless range of virtual resources (Muddiman 1999: 16).

According to Muddiman (1994) a “new vocationalism” in LIS education has emerged with an orientation based on the labour market rather than professional values grounded in public service. Therefore, there is an increasing pressure for the LIS curriculum timetable to be filled with IT and retrieval and management studies at the expense of more social aspects of the profession. Muddiman (1994: 267) comments on these trends and the trend towards including more generic “skills” in the curricula, are inclined to limit the operation of module elements with more ‘critical goals’. In this way the new vocationalism acts as a kind of ‘crude blocking mechanism’, which restrict ICT attempts to allow students to develop a “thorough and more multi-faceted

understanding of the world of work". The values of the new vocationalism (individualism, entrepreneurship and so on) rest uneasily with the traditions of critical independence and social responsibility characteristic of some LIS courses. Therefore, Stilwell (2002: 1) argues that the development of knowledge and skills essential for information searching plus the analysis, synthesis, ordering and management of that information is crucial for service to the user. An emphasis on ICT is seen as important for opening up the potential for the virtual library in the postmodern sense, a library envisioned in the literature as both ethically grounded and socially responsive. Furthermore, Fisher and Matarazzo (1993: 290) argue that the general conclusion that many authors draw is that the basic LIS curriculum, especially a one-year programme, cannot prepare a new graduate for all the demands of the first job. The most any library school can do is to give students both a philosophical and practical foundation upon which to begin their careers. Therefore, initial on-the-job (in-service) training and continuing education is necessary for librarians to mature professionally and to maintain currency.

3.1 ICT and universities

In 1995, the International Association of Universities (IAU) created, within its Board, a Task Force on Universities and ICT. This Task Force examined the main questions concerning the impact of ICT on universities, the benefits of, and limitations to, the use of IT in teaching, learning and research.

According to Langlois (1998: 285) ICT and particularly the Internet and its applications (the most well known being the WWW), in providing wide access to information and new instructional possibilities, are changing the learning and research process, for example, how we search, discover, teach and learn. With the development of sophisticated information technologies, the future of universities depends on their capability to adapt to the new information society and meet the needs of an ever more demanding professional market. A new concept has emerged, the 'virtual' university, meaning that the university can offer its services via data networks, its training and research being established on information highways.

3.1.1 Areas of the university affected by ICT

Information technologies have an increasing impact in several areas of the university.

These include:

- Teaching and learning
 - the teaching and learning process
 - the educational products and services (programmes and courses)
 - organisation and management teaching
- Research
 - the research process
 - publication facilities
- Libraries and information services
 - increased access to information
 - administration of libraries
- University management
 - efficiency of management process
 - information technologies related to issues of institutional management (Langlois 1998: 286).

Libraries and information services have, for many years, witnessed the benefits of ICT. Their tasks, which are to provide access to information to students, teachers and researchers, can be considered as belonging to the teaching, learning and research process.

3.1.2 ICT used in teaching and learning

Information technologies have been seen as a resource to help fulfill the university educational mission. Nowadays, different areas of learning, science and technology are making far more use of information technologies.

The following technologies and facilities are increasingly being offered in universities:

- General tools: text editing, electronic mail (e-mail) boxes for student and teachers, Internet navigation, transfer of files and training material, WWW, discussion groups, chat rooms, video-conferencing, communication links to student residences between students and teachers, computer study halls, for instance.
- ICT in access to information: through the WWW, access to scientific information, literature, journals, course and training material, explanations through multimedia, databases, for instance. Huge libraries are put at the disposal of teachers and students who are able to surf the equivalent of entire bookshelves. Online public access catalogues (OPACs) are widely developed on campus and made available on the Internet by a growing number of institutions.
- ICT in organisation and management of instruction: student progress, registration, evaluation and test systems, assignments through bulletin boards, distribution learning, flexible scheduling, for instance.
- ICT in course and laboratory material: to assist traditional classes, for example, when students have to examine case studies, they can be shown videos, interviews of various people involved and comparative data on-line. Students can see the situation from different viewpoints and their learning experience is enhanced considerably. Similarly, in engineering fields, for example, simulated and remote-controlled laboratories are used, as hands-on experiences in this area are often no longer available.
- Distance tutoring and ‘virtual’ classes: More effective learning techniques are offered in place of traditional distance teaching techniques such as radio broadcasting and television (Langlois 1998: 286-287).

3.1.3 ICT used in research

Traditionally, research networking and research dissemination were based on personal contacts and publications. As communication is an inherent component of research, ICT is, therefore, essential for researchers to enjoy a far wider international cooperation in their field. The following technologies and facilities are already available to researchers:

- General tools: E-mail and file transfer, sending out papers and search results, electronic publishing which has had an enormous impact on libraries.
- Access to large amounts of relevant information in their fields due to digital libraries and on-line publications.
- Use and sharing of remote computer resources for scientists (Langlois 1998: 288).

3.1.4 Changes and consequences resulting from the use of ICT in teaching and learning

The following are changes and consequences resulting from the use of ICT in teaching and learning by universities:

- Expansion and increased efficiency of the instructional process;
- Development of new teaching and distance learning modules;
- Cost-effectiveness;
- Changes in the role of the teacher;
- Changes in learning styles; and
- Improvement of communication (Langlois 1998: 288-289; Mambo 1997: 42).

3.1.5 Changes and consequences resulting from the use of ICT in research

The following are changes and consequences resulting from the use ICT in research:

- Locating and accessing large amounts of relevant information online;
- Developing contacts among scholars;
- Rapid dissemination of research results and publications;
- Substantial travel savings, for instance; and
- Increasing research capacity by sharing equipment and using remote computer resources (Langlois 1998: 289).

3.1.6 Limitations to the implementation of ICT in universities

The following are limitations to the implementation of ICT in universities:

- Lack of literacy amongst teachers and managers: The literacy of teachers as regards ICT is limited. There is too little training in information technologies available to them. Many academics are still not really prepared to use ICT in their classes.
- Cost factors: Still expensive, technology (hardware, software, for instance) develops so fast that it has to be constantly updated and upgraded. There are also costs to students. Economically disadvantaged students may not have access to new technologies, as they cannot afford a computer.
- Lack of technical support staff: Many universities lack sufficient networking technical staff to support the expansion of information technologies. Not only technical staff are needed, but technologically literate staff who are able to teach the use of information technologies. Given the fast evolution of information technologies, skills will have to be regularly maintained.
- The Internet: Consulting the Internet can be extremely slow if you do not have fast connections and powerful equipment. Information is too abundant and, at

times, not reliable (when outdated information is not removed). It is necessary to develop filtering methods. Search systems, although developing rapidly, are still insufficient.

- **National Telecommunications Support Structure:** Communications are not good in certain countries. Transfer rates are slow. Building a good infrastructure is essential. Government policies should be encouraged to support information technologies.
- **Threat to socialising the university:** Many still believe that individualisation of the learning process may create the risk of a loss of socialising between students, and student and teachers. Although communication between students and teachers is temporarily enhanced, in the long run there is a fear that the use of information technologies, by increasing self-teaching practices, will diminish the relationship between students and teachers.
- **Linguistic problems:** Only the best-known languages can be used on international networks. Lesser-used languages are used nationally, but cannot be spread internationally. Information technologies will, therefore, lead to lesser-used languages being used even less (Langlois 1998: 289-290; Mambo 1997: 44-46).

3.2 ICT and the academic library

3.2.1 Change and the academic library

Academic librarianship is purported to have changed more over the last few decades than in its entire previous history. The factors affecting such change may be divided into four categories: economics, technological, higher education and organisational (Farley, Broad-Preston and Hayward 1998: 238). The economic forces faced by academic libraries, compound the problems libraries face. The combination of a reduction in library funding, the increase in price of all library materials beyond the rate of inflation, and the large rise in the volume of new books and journals published

places libraries in a difficult position. The increasing cost of books and journals has fuelled the “access” versus “holdings” debate, and has led to increasing reliance on inter-library loans and collaborative and co-operative arrangements such as the establishment of library consortia.

Advances in technology not only compound existing financial pressures but also exert additional pressures, as:

...at the same time as library funding was being squeezed at many institutions, other demands on limited funds were being made by the many new developments in information technology, such as automated catalogues, CD-ROMs and on-line links to external databases (Farley, Broad-Preston and Hayward 1998: 240).

IT has increased the capabilities of library services enormously, creating options for networking to provide access to vast stores of electronic information, for more sophisticated library housekeeping systems, and for greater bibliographic access. However, technology can also create further pressures on a library's resources at the same time as delivering a vastly advanced service. Problems of obsolescence and compatibility of hardware and software can be costly, and the demands for training, both staff and library users, are great. Although automation may make for a more efficient service, the problems of adoption for library staff have been well charted (Farley, Broad-Preston and Hayward 1998: 241; Pretorius 1995).

Therefore, technology and automation require staff at all levels to adjust and adapt to the changing roles and responsibilities that are entailed.

A significant challenge posed by IT for both library and information staff and users is the sheer volume of information available electronically, leading to a sense of “information overload” for users. Also higher education in South Africa has experienced massive changes over the last decade in terms of student numbers, teaching patterns and funding levels. In this changing situation the library's function in supporting the learning process is unquestioned. The constitution of the student body is also diversifying, with a greater portion of “non-traditional” students such as part-time and distance learners, mature students and overseas students, all of whom may have different modes of attendance, qualifications,

experience and expectations. They will have different patterns of library use and may need support in information and study skills (Viljoen and Underwood 1997: 47).

Teaching and learning patterns have developed towards greater modularisation and place an emphasis on self-direction, independent study and student-centred learning. This places greater demands on the library which is increasingly being used for group and project work, and librarians face increased pressure on the reference service and a greater need for user support and education. The reduction of the student grant and emphasis on self-funding through loans also impacts on the library services in two ways. First, the decline in students' book buying as a result of declining disposable income leads to students rely instead on library provision. Second, students have been encouraged to regard themselves as consumers, especially if they are funding themselves, and this can translate into greater demands on the library service in terms of value for money, effectiveness and efficiency (Feather and Marriot 1993: 25).

Developments in the organisational and political sphere of higher education can also heavily influence the working of the library service. Changes in management and in organisational structure in response to changing needs of users affect the roles and responsibilities of staff that must provide a more consumer-centred service (Farley, Broad-Preston and Hayward 1998: 241). This may be evident with the proposed merger between the University of Natal and the University of Durban-Westville, which was discussed in the previous chapter.

In examining the factors that are impacting on academic libraries, it is clear that academic libraries have to change in order to respond successfully to the new realities of the higher education environment. In the four categories of change outlined above: economic, technological, higher education and organisational, there is one common thread that will influence the organisation's ability to respond to change, and that is people. It is the way in which people respond to these challenges that will determine whether the necessary changes can be adopted successfully. The ability of the library staff to meet the challenge of change is of

utmost importance as change is constant and staff members must be ready for whatever happens next (Farley, Broad-Preston and Hayward 1998: 242).

3.2.2 The effect of change on the role of the subject librarian

As stated in the introductory chapter, the subject librarian's role is far from being static. It has changed rapidly in recent years, in response to new forms of information and new methods of teaching and learning. Increased student numbers have spread existing subject staff more thinly; widening modes of access have brought in more part time students; more student centred learning demands a greater range of teaching skills; and the explosion of electronic information (from CD-ROM to the Internet) requires continuous updating of knowledge and skills (Bluck 1996: 97). Convergence between libraries and computer centres may also broaden the academic liaison role to include the ICT needs of students and staff.

Allowing for considerable variation between institutions and between disciplines or subjects, the role of the subject librarian is centred on four main areas: academic liaison, collection development, information skills teaching (or user education, or library instruction) and enquiry work. Therefore, technological changes have implications for subject librarians and their professional development. Subject librarians will need to acquire more sophisticated teaching skills, further IT skills, and a better understanding of the information needs of their students and staff. Therefore, Bluck (1996: 101) further argues that the essential qualities or skills required for a subject librarians are: IT skills and awareness; interpersonal skills (with library users and with colleagues); presentational skills (for teaching programmes); and team work skills for working in a group.

Furthermore, user expectations of the ability of a library service to deliver high quality services are growing. Linked to user demands for services is the influence of information technology. Students, for example, are becoming more computer literate and the academic library environment has changed substantially in the increased variety of technology on offer, which can be used as channels for its service delivery. The subject librarian has become more of a consultant in information services and many users want to conduct some, at least, of their searches from their own

workstations (Viljoen and Underwood 1997: 47). If users want to be more independent in their search for information, user education in the use of information systems and databases is very important. This implies that subject librarians will have to have the necessary ICT knowledge and skills before they can impart them to their users. This view is supported by Bluck (1996: 98) who argues that:

...the changes due to new technology and information systems means that all subject/information librarians will be expected to master “navigational skills” to get through electronic databases and show others how to do so.

Also, continued financial constraints have placed greater pressure on collection development policies, and given impetus to the move towards more networked information in electronic format. Therefore, for subject librarians to perform their roles effectively and efficiently in such a demanding electronic environment they will have to have the necessary ICT knowledge and skills, in other words, they will have to be computer literate.

3.2.3 The development of ICT and the academic library

ICT developments, as discussed earlier, have changed the academic library over the last few decades. However, libraries function within a broader context that includes the publishing and information market, changing modalities of scholarly communication, and evolving capabilities in the user community. ICT has profoundly changed all aspects of higher education and scholarship, and these changes continue to unfold. Innovation and transformation for academic libraries take place within a broader context; therefore libraries cannot be considered in isolation of this context. Starting in the late 1980s or early 1990s, academic libraries were confronted with environmental changes driven by ICT, which quickly moved the focus of attention away from automation towards a series of much more fundamental questions about library roles and missions in the digital age (Lynch 2000: 60).

Libraries were forced to react to developments in ICT and their cultural and economic consequences, rather than methodically exploiting them. The emergence of the WWW in the mid-1990s is perhaps the great symbol of this shift, with all its

implications for scholarly communication. At the start of the new century, libraries are struggling to absorb innovation and to recognize the implications and meanings of transformation. There is a rich and fascinating early history of ICT in libraries, reaching back to the 1950s and early 1960s, as part of the post-Sputnik revolution in science and technology. Yet for most academic libraries, this technology first arrived in force in the late 1960s or early 1970s in the form of locally developed or commercial products intended to automate the library processes. Minicomputers were introduced to automate circulations, and books were bar-coded. Computer-based ordering systems were introduced to pass orders to book and serial jobbers. These changes simply made existing manual processes more efficient and helped to control their costs. This was a period of significant management challenges for libraries. Perhaps the greatest achievement of this period, which continued until the early 1980s, was the development of shared copy-cataloguing systems (Chisenga and Rorissa 2001: 2).

Shared cataloguing was pioneered by a number of library consortia in the 1960s and 1970s. Today, these efforts have been consolidated into two major shared cataloguing systems, one operated by Online Computer Library Center (OCLC) in Columbus Ohio, and the other by the Research Libraries Information Network in Palo Alto, California (Lynch 2000: 61). By the 1980s, the shared cataloguing databases had become quite large as a result of retrospective conversion programmes for older books and some years of use in cataloguing new acquisitions. The central databases began to reflect the collective holdings of the major research libraries. The next significant change was the development of OPACs as a replacement for the traditional card catalogue. The online catalogue was a huge advance. But it was almost completely irrelevant to many library users. Traditionally, library catalogues have contained entries for books and for serials but had not described individual articles in a journal. Given that journals, rather than monographs, are key literature in many disciplines, particularly in the sciences, and that by the mid-1980s a typical research library was spending more than half of its acquisitions budget on journals, the library cataloguer was unresponsive to the needs of many library users, particularly in the sciences (Lynch 2000: 61).

Abstracting and indexing services, such as Index Medicus (now MEDLINE) for the health sciences literature, abstracted articles in journals and supplemented the local library catalogue. Since the 1940s (or earlier), libraries had been purchasing series of printed volumes. Not until the late 1980s and early 1990s were these abstracting and indexing databases mounted for interactive public access, both by research libraries and by new commercial services that marketed to the library community, opening up the journal literature to the library user in the same way that the online catalogue opened up the monographic literature. The 1980s and early 1990s also saw major investments in resource sharing. Union catalogues were one example; another was development of computer-assisted interlibrary loan systems that were built on the shared national union catalogue databases. A library that needed a book could find out which other libraries had it and could generate and manage a request to borrow it from one of those libraries through interlibrary loan. Facsimile technology was applied for the delivery of journal articles on an expedited basis (Chisenga and Rorissa 2001: 3).

Online catalogues, though wildly popular, rapidly created demand for actual content in digital form. Once library users had begun to enjoy the freedom of remote, twenty-four-hour-a-day access, they quickly grew frustrated with searches that ended with the identification of print material that they had to wait to get or that they could not easily get (for example, if they were searching a catalogue halfway across the world, at another institution). By the late 1980s and early 1990s, the costs of storage and bitmapped display technology had come down considerably, and networks had become faster. It was possible to deliver content, either as page images (bitmaps and later formats such as Adobe Portable Display Format (PDF)) or as American Standard Code for Information Interchange (ASCII) text (for materials that did not need charts, graphics, equations, or special characters). With the emergence of the Web, Hyper Text Markup Language (HTML) offered another alternative. Publishers and aggregators (companies that obtained material from multiple publishers and repackaged it into a “one-stop” database) began to offer this material to libraries. Numerous troublesome issues arose; most of these are still unresolved (Lynch 2000: 64).

Libraries had already encountered the high cost and complexity of negotiating license agreements for abstracting and indexing databases. In the late 1980s, the world of scholarly communication, teaching, and research began to change as a result of networking and advanced ICT. The idea of networked information emerged: a vast constellation of digital content and services that were accessible through the network at any time, from any place, could be used and reused, navigated and integrated, and tailored to the needs and objectives of each user. Networked information implied a breakdown of geography as an organising principle. All resources on the network were equally close, and they could complement or compete with each other; relationships between information providers and information users became much more complex. International information sharing and collaboration were greatly facilitated. The use of the Internet became critical in many forms of scholarly communication. By the early 1990s, the idea of the “digital library” was popularised. Multimedia became a routine part of content and communication for learning and research: videos, images, simulations, virtual reality walk-throughs, and audio were all carried by the Web (Lynch 2000: 68).

In the networked information revolution, libraries not only offer their own networked-based services but are also becoming increasingly involved in the management organisation of external activities on the network. It is interesting to note that although the progress of automation in the past thirty years has focused on implementation and management of technology, the agenda for the new century is almost dominated entirely by addressing effects and implications of technological change. Technological change has transformed the activities of the academic library as an organisation as a result of the new technological capabilities and the shifting context of higher education and scholarship:

Libraries have been part of a major information revolution for more than a decade and must now rethink all their functions, services, and organizational structure. The impact of the electronic information environment and constantly changing technology are increasingly forcing librarians to deal with major changes. While librarians have to remain in a continuous learning mode to keep up with new trends and sources, they must rethink how they do their work and how they provide their service. Now, however, librarians must begin to understand the changing desires and needs of their users as related to acquiring knowledge and using information (Rader 1999: 215).

3.2.4 ICT in academic libraries in South Africa

The report of the Interministerial Working Group on the Library and Information Services (LIS) function advised the government on mechanisms to ensure good governance of the library and information system at the national level in South Africa. In relation to ICT it recommended that LIS policy should not be approached in isolation from the general national information society policy; rather, the role of LIS in the broader information society policy should be stressed (Darch and Underwood 1999: 287). The themes of the information society and need to enhance the skills of the populace of South Africa resonate in the National Commission on Higher Education Working Group on Libraries and Information Technology (WGLIT) report which considered policy implications for the role of libraries and IT in higher education (Young 1996). The complementary and interweaving roles of IT and libraries in relation to the development of the national information society policy were explicitly recognised. The WGLIT investigation was framed by a vision of a new national information system capable of integrating its component parts into a seamless whole, rather than one in which individuality is highlighted, and of a transformed higher education system responsive to both the national agenda of reconstruction, and also the demands of globalisation and the new knowledge economy (Darch and Underwood 1999: 287). Graduates of the new system should exit with skills which are attributes of the new information age: the skills to gain access to appropriate information, the ability to evaluate and discriminate between sources, life-long learning skills, and social skills which promote co-operative work (Young 1996: 3).

The library, if it has adequate levels of information technology and connectivity, is ideally placed through information literacy programmes to participate in preparing graduates to meet the challenges of the knowledge economy. According to Darch and Underwood (1999: 288), libraries belonging to the higher education sector occupy a leading position with regard to ICT applications in South Africa. As discussed earlier, South Africa's academic institutions are divided in two ways. The first of these divisions is the institutions, which were intended in the period of apartheid, to serve the white population, and thus were well financed and well resourced, for instance, the historically advantaged institutions. The second of these are those, which were for

the use of the black population (that is, “Africans”, “Indians” and “Coloured”). These historically disadvantaged institutions were starved of funds.

However, there is scarcely an academic library left in the world that has the financial resources to purchase all the monographs, journals or electronic resources it needs. This has led to the development of library consortia, in an attempt to rationalize the use of information resources, through sharing and granting access. However, Darch and Underwood (1999: 289) importantly point out that in terms of infrastructure, South African consortia do not have access to the connectivity or the general ICT environment, which makes this kind of cooperation so effective elsewhere in the world. The five major consortia in South Africa are:

- South Eastern Academic Libraries System (SEALS), in the Eastern Cape, one of South Africa’s poorest regions;
- GAELIC, based in Gauteng, South Africa’s smallest but richest and most economically dynamic province;
- Free State library and Information Consortium (FRELICO), in the Free State, with strong links to GAELIC;
- Cape Library Cooperative (CALICO), in the greater Cape Town Area; and
- esAL, in KwaZulu-Natal (discussed in more detail in Chapter 2).

3.3 Computer literacy

As computers become increasingly commonplace in all kinds of organisations the ability to use computers has become an important skill. While this skill rapidly obtained a name, “computer literacy”, little consensus has developed on precisely what set of abilities it actually represents.

3.3.1 A definition of computer literacy

While the importance of computer literacy is rarely disputed, defining the term has long been the subject of discussion. So far, no single consensus definition of

computer literacy has emerged in the literature. Instead, the definition has changed as computer technology has changed and expanded its range of relevancy. According to Van Vliet, Kletke and Chakraborty (1994: 837) early definitions of computer literacy focused on an awareness of computer terminology and the uses to which computers should be put. This was largely focused in theory, with not much application involved. After the introduction of microcomputers made computing more generally available, computer literacy was often associated with the ability to programme computers.

When the subsequent availability of a diversity of application software made programming less necessary to end-users, the definition of computing literacy became associated with the ability to use computers for obtaining needed information and for solving problems, and with the ability to critically evaluate the results. Computer literacy then began to include the ability to use a word processor and a spreadsheet. This approach to computer literacy allowed educational institutions to take computer education beyond specific programming course and integrate it in an entire curriculum. At the same time, an alternative and more general definition of computer literacy emerged, describing the term as the ability to function in a modern information society (Rosenberg 1991: 59).

Considering computer literacy from the viewpoint of organisations, it has been argued that an individual's level of computer literacy depends greatly on the individual's position in the organisation under consideration and may be specific to an occupation. Van Vliet, Kletke and Chakraborty (1994: 837) argue that this is probably the most realistic approach, given the pervasiveness of computers in so many different organisations and so many different applications, no single definition of computer literacy will be likely to cover all of them. Computer literacy is therefore highly context-dependent. Given this, Van Vliet, Kletke and Chakraborty (1994: 838) provide the following definition for computer literacy:

Computer literacy is the ability to use microcomputers confidently for obtaining needed information, solving specific problems, and performing data-processing tasks. This includes a fundamental understanding of the operation of microcomputers in general, as well as the use of several types of application software packages.

In this definition, the ability to use microcomputers confidently means that a person has the ability to respond via keyboard, and perhaps a mouse, to questions or other types of communication that might be part of a software programme. The fundamental understanding of microcomputer operations in general includes a basic comprehension of an operating system and the ability to perform routine tasks such as looking at directories of diskettes or copying a file. Application packages that are now part of the computer literate person's repertoire are word processors, spreadsheets, and perhaps, database management systems.

According to Morgan (1998: 39) computer literacy means "taking control of your computer and not letting it control you". In short, computer literacy is knowing what a computer can and cannot do. The next step is learning what kind of computer tool to use to accomplish specific computing tasks. For librarians, these computing tasks usually involve editing text, organising text, and disseminating text.

3.4 Librarians and computer literacy

This section discusses the importance of computer literacy for librarians.

3.4.1 The importance of computer literacy skills for librarians

From the literature it appears that there is generally a lack of ICT knowledge and skills amongst academic librarians. This is reflected in at least four African studies. These include a study conducted by Ibegbulum (2000), which examined the opinions of librarians on the role of ICT in the provision of reference services in Nigerian universities. A study conducted by Moahi (1996), which examined the ICT training of librarians in Botswana, and studies conducted by Nawe (1998; 2000) that examined the experiences of Tanzanian academic librarians in using ICT.

Two South African studies, both conducted by Kaniki (1996; 1999) have focused on the use and knowledge of the Internet by academic librarians of the esAL consortium in KwaZulu-Natal. Kaniki (1996: 10) argues that a librarian must have the necessary ICT skill and must have the knowledge (subjective and objective) at different levels depending on need, to work the Internet. These skills and knowledge will include

among others, technical skills for connecting to the Internet, awareness of what resources and services are available, and skills for choosing and accessing the appropriate resources and services. According to Kaniki (1999), in order for librarians to provide the user with access to or user education services in the use of Internet resources, further assumes that they (librarians) are knowledgeable about the Internet resources and possess better searching skills in the use of the Internet for research and study needs, than students, researchers and academics. Two further South African studies were conducted by Ocholla and Mgobozi (2002) and Ocholla and Mugwisi (2002). The study conducted by Ocholla and Mgobozi (2002) compared the use of electronic journals for the dissemination of scholarly information by the University of Natal and the University of Zululand. Academic librarians at these institutions were part of the population survey for the study.

Ocholla and Mgobozi (2002) considered computer literacy to be a problem when related to the use of electronic journals. The study conducted by Ocholla and Mugwisi (2002) examined Internet use, trends and attitudes among academic librarians at the University of Zimbabwe and the University of Zululand. Findings in this study revealed that the majority of the respondents required both Internet and computer training.

The studies conducted by Ocholla and Mgobozi (2002), Ocholla and Mugwisi (2002), Ibegbulum (2000) and Kaniki (1996; 1999) used the survey method with a questionnaire as the data gathering instruments. The case study below presents a situation in which a librarian who is a recent college graduate and has computer skills is chosen for a job over a librarian who has no computer skills, but a considerable amount of experience before she left her job. The case study which follows highlights the impact of IT on librarianship.

Wilma Pokress was all smiles as she walked to the office of Leon Skura, the director of the Corso Public Library. He'd just phoned to ask if she'd join him and Assistant Director Katherine Van Wilken in his office, where they would name the new librarian who would work with Pokress. Like a gambler with a tip on a horse race, Pokress was betting on what she knew would be a sure thing. Out in front coming into the homestretch was Mary Gustafson, one of her dearest friends and a staffer at Corso for ten years before leaving to raise two children. Her kids were now old enough to take care of

themselves after school-especially since the plan was for them to come to the library and to do their homework until their mother's shift ended, freeing her up for return to the working work.

"Come on in, Wilma," Skuru said, waving the women into his office. "Kate and I wanted to tell you in person that we've made a decision regarding the open spot on the staff. We also wanted to thank you for meeting with the candidates and providing feedback. So without further mystery, it is my pleasure to announce that we've hired Julia Stiles to fill the position."

Pokress's horse had broken a leg and would have to be shot.

"You mean you're not giving the job to Mary?" she said, unable to contain herself.

"No. Sorry, Wilma."

"May I ask why?"

"We didn't feel she possessed the right qualifications to handle the job," Skura answered.

"How could she not be qualified? She used to work here. She qualified then but not now?"

"Exactly," the director said.

"Excuse me?" asked a stunned Pokress.

"She doesn't have any computer skills," stated Skura, flatly. "Mary worked here about 12 or 13 years ago. We had no CD-ROMs back then, no Internet, no online databases. While the information revolution was going on, Mary was packing lunches and folding laundry. She told us herself she has no idea how any of the electronic reference services work. The woman doesn't even [k] now how to use e-mail."

"She could learn. I'd teach her," Pokress insisted.

"I'm sure she could learn, but it would take months, and teaching computer skills is not your job," continued Skura.

"I know you and Mary are friends and you're disappointed," van Wilken added, "but if two people come to a locked door and only one has the key, then one goes in and the one stays out. The other candidate had more to offer."

"With all due respect," said Pokress, "I met Julia Stiles when she interviewed, and she's just a green kid, fresh out of library school with hardly any experience."

"She has a year of working at her current location and she is completely computer literate. She could probably teach every one of us a new trick or two," said Skura.

"I'm sure she could," admitted Pokress, reluctantly, "But doesn't ten years' experience in the same job in this very library count for something, or is librarianship just about computers now?" (Rogers 2001: 61-62).

In analysing the above case study it is evident that Gustafson would have to upgrade her skills. Her desire to re-enter the workforce exactly where she left it ten years before demonstrates just how significant the impact of technology, the influence of lifelong learning goals, and the importance of strategic planning and decision-making have been on the practices of librarianship. Without any effort to ongoing professional development, continuing education, staying aware of trends in the field, it seems impossible for her to resume work as a librarian after so many years away.

Gustafson had applied without the necessary skills. Rogers (2001:62) argues that even with an extensive training programme, most libraries can not afford to hire staff who have no knowledge of computer use. This is not only true in the library profession. Therefore, anyone entering the workforce must have basic computer skills:

The tools of the trade are your brain, your peers, and your computer. When it comes to your brain, you have to know how to think. Think creatively. Think systematically. When it comes to the second tool, "No man is a island" and "Two heads are better than one" speak for themselves. The third tool, the computer, provides the most powerful means for implementing the ideas created by the interaction of tool #1 and tool #2. Librarianship requires the mastery of all three tools in order to do quality work. You expect a surgeon to be a master at using a scalpel. You wouldn't hire a carpenter who didn't know how to expertly use a hammer. In today's world, why would anybody trust a librarian, whose profession is about information and knowledge, who hadn't mastered a computer? (Morgan 1998: 39)

Woodsworth (1997: 46) argues that change is running rampant in libraries, with technology as the driving force. This has resulted in librarians constantly questioning their future and the competencies they will need to survive professionally. Job advertisements today give some clues as to the skills required. A study conducted by Zhou (1994) revealed that computer applications have changed in many aspects the ways by which libraries provide services. As a result, computer literacy has gradually become an important competency for librarians in many positions. This study

investigated the market change regarding the demand for computer literacy for librarians in academic and public libraries from 1974 to 1989.

The study collected data from 3,125 job advertisements published in *American Libraries* in 1974, 1979, 1984, and 1986 for full-time professional librarian positions in academic and public libraries. Among them 2,091 were from academic libraries, and 1,034 from public libraries. Content analyses was applied to each advertisement to determine whether or not the position demanded computer-related competencies, and if so, what particular competencies were specified. The study revealed that the demand for computer literate librarians increased substantially during the period studied, but the increase was more dramatic in academic libraries than in public libraries.

According to Woodsworth (1997) a scan of recent job advertisements revealed that the following skills were required. These included:

- Library instruction position: familiarity with presentation software and technology relative to web-based instruction;
- Government documents librarian: HTML and aspects of Web page management;
- Authority control librarian: experience with Standard Generalized Markup Language (SGML), HTML, and other Web standards;
- Manuscript cataloguer: experience with web site management; and
- Reference librarian: technical knowledge of DOS (Disk Operating System), Windows, networked environments, and the Internet.

Clearly, many tasks in the digital environment will mirror print-based library functions and problems, but others will differ. Therefore, librarians have to develop technological competencies. Woodsworth (1997) suggests that technological competencies are the most critical ones for all librarians, even if they obtained their professional credentials as recent as the early 1990s. Basic competencies for librarians must include knowing what the Internet is and is not; evaluating and using

hardware, software, and networks; and understanding basic computer and information science concepts.

According to Marmion (1998: 216) the biggest technology challenge facing the library profession today is that of preparing employees to use technology effectively. To meet this challenge, libraries must pay much more attention to technology training and computer skills than they traditionally have in the past. Computers, connectivity, and electronic information are playing an increasingly important role in what librarians do. They are, in fact, redefining the library profession. Since computers have assumed such a central role in the library profession over the past few years, librarians need to know more about them.

3.4.2 What computer skills do librarians need?

Latham (2000: 41-42) argues that every librarian should be familiar with all components of an office suite: word processing, spreadsheets, databases, and scheduling programmes. Librarians should be able to choose the appropriate application for the anticipated result, that is, a database for lists repeating the same type of information, spreadsheets for tracking numerical data, word processing for forms, for instance. The staff should be able to make use of the extended capabilities of an application: to create charts, import graphics, and attach files, and so on. They should know what is attached to their central processing unit (CPU), and how it is attached, and they should be able to perform basic troubleshooting functions: power source, monitor adjustments, reboots, printer response, and how to write down error messages. All librarians should be familiar with installing, configuring, and using a browser and should be able to discuss intelligently their favourite search engines on the Web and explain why they use each one (Latham 2000).

Librarians should also be able to discuss when a Web search is preferable to a print search, and vice-versa. Every librarian should be familiar with e-mail and its more sophisticated functions; folders, sorting to folders, address books, attachments, groups, v-cards, for instance. Beyond the functionality, however, we need to look at ways to use-email to expand communications within the organisation, particularly large organisations. Due to the penetration of standards, all staff should be familiar

with whichever version of Windows is run within the organisation, how to navigate through Windows (with and without a mouse), and how to manage files associated with Windows (Latham 2000: 41). Also, every librarian should be familiar with not only the functions of the public access workstations but the care and maintenance of those installations, hardware as well as software. The more librarians know about standard installations, the more control they have, the better their service to the users will be. Librarians should have a basic understanding of their institutional network design, local area networks (LANs), and wide area networks (WANs), so that they can perform a minimal level of intelligent troubleshooting. Latham (2000: 42) further suggests that basic troubleshooting begins with back of the computer: "Is the cable connected correctly? Does it run to the right jack? Does it terminate correctly at the hub? Is the router working? What lights are on? Are they the ones that should be on? If they aren't, what do I do next?"

Therefore, Latham (2000: 42) argues that every librarian should understand:

- Web browsers.
- E-mail.
- Windows.
- Networking essentials.
- Basic computer diagnostics.

In addition as webmasters, librarians need skills such as knowledge of HTML, tables, browsers, graphic placement, Common Gateway Interface (CGI) programming, UNIX and Java (Saunders-McMaster 1997: 37).

Like Latham (2000) Marmion (1998:217) suggests that librarians need to get to know the operating system of the computers they use. The challenge facing libraries is to get their librarians up to speed and to master the tools they use in working with electronic information. According to Marmion (1998: 217) while many individuals, and even some institutions are already there, as a profession librarianship is not. Many research libraries, even, are not. The electronic age is here now, and librarians are not quite ready for it. Ongoing training is necessary if today's libraries are to keep

up with changing technology. Also, it is widely recognised in the literature of library and information science that there is a need for library staff that are well trained in information technology:

The goal of virtual library staff training and support should be the creation of a staff capable of creating, maintaining, and expanding virtual libraries; capable of constant learning or 'retooling'; and most importantly, capable of imaginative innovation, without which today's cutting-edge virtual library will be tomorrow's actual disaster (Marmion 1998: 217).

According to Krissoff and Konrad (1998) how do librarians provide better training for library users when librarians themselves are being overwhelmed by change? This implies that librarians will be failing those they serve if they do not acquire computer skills. One solution lies in information agencies making a formal commitment to staff computer and technology training. Librarians, as instructors and trainers, must develop the confidence and computer competencies necessary to make intelligent decisions about what their users need to know and about effective strategies for teaching those skills. This is true in all information agencies, whether they are working with users in formal instructional sessions, one-on-one at the reference desk, or simply developing point-of-use guides for users. By putting themselves first in the electronic information age, librarians stand a much better chance of continuing to provide the levels of service to which they, as a profession, have historically aspired.

Krissoff and Konrad (1998: 29) argue that for librarians or users to consider themselves truly information literate in this day and age, it is essential that they develop both traditional literacy skills and fundamental computer literacy skills. Like Latham (2000) and Marmion (1998), Krissoff and Konrad (1998) argue that computer literacy hinges on developing a basic level of competency in three areas of computing: operating system, hardware basics and troubleshooting. Software basics and troubleshooting:

- **The operating system**

Since the operating system is the software foundation that enables the computer to process information, manipulate data, and provide output to users, it stands to reason that a rudimentary knowledge of how it functions is critical

if users are to be successful in manipulating and exploiting the information resources provided to them by the library. Among other things, staff and users alike must have a working knowledge of the platform on which their computers sit, an understanding of the interface and desktop environment, the ability to format floppy disks, the ability to create and manage files, and a thorough understanding of how to gain access to the various networks available from a given platform.

- **Hardware basics and troubleshooting**

It is difficult to imagine any type of information agency in which a familiarity and working knowledge of the hardware in that environment would diminish the amount of downtime experienced due to mechanical failures in the system. It is at the hardware level that many configurations are most vulnerable. It is also at this level that staff and users alike most easily resolve many problems. The ability to recognize and troubleshoot problems with printers, disk drives, cable connections, and other hardware can reduce the amount of time the system is down as well as the level of staff and user frustration. For staff, it is important to develop skills in recognizing system freezes and where they are occurring.

- **Software basics and troubleshooting**

It is the software level at which all users, should become simply more competent. Users should be trained and encouraged to explore, interact with, and develop a solid understanding of the various types of software they use to conduct their research. Even the most computer-phobic of users must clear the software hurdle if they are to have any chance at using today's information systems. Before one can begin applying search concepts and techniques, one must understand basics such as dealing with software crashes, cutting and pasting, setting application preferences, changing display formats, and preparing or selecting data for output to printers, floppy disks, or e-mail accounts. Increasingly, Internet browsers are used as front ends to locally mounted resources as well as to Internet resources. In this case, an in-depth understanding of how Internet browsers function is essential.

In addition Morgan (1998: 39-40) argues that there are three areas that librarians should be familiar with; text editors and word processors, spreadsheets and databases, and local and networked services.

- **Text editors and word processors**

Text editors excel at manipulating ASCII characters. Text editors complement word processors, whose purpose is to format ASCII characters. Word processors provide the means for highlighting, footnoting, and stylizing text. Text editors are generally less computing-resource-intensive. Since they do not offer the means for formatting text, they force one to consider what they are writing instead of what it looks like. Text editors are also the sorts of tools one uses to edit configuration files, HTML files, and programme source codes. Generally text editors support enhanced find or replace functions, better sorting, and options for line wrapping. Text editors, by default, save things as (ASCII) text files. Therefore, the files one creates with text editors will be readable by any other computer. Files created with text editors are universally readable by any other computing platform.

- **Spreadsheets and databases**

The bread and butter of libraries are lists. List of books, citations, facts and Internet resources. Most of these lists have structure, and structured lists are databases. Ironically, few librarians have very much expertise in the use of databases, for example, Microsoft Access. While these applications would not handle the requirements of most library catalogues, they are more than adequate when it comes to smaller collections like subject-based Internet resources, bibliographies, image collections, reserve room materials and frequently asked questions (FAQs).

Spreadsheets are very specialised database applications. They are designed to manipulate rows and columns of numbers. A spreadsheet is an application designed to answer the “what if” questions for numerical analysis, for example, “What if we were to raise the salaries of these librarians by seven percent, then what would happen to our total salary budget?” Spreadsheets do

not excel at handling text, and most of the work librarians do surrounds text manipulation. Therefore, librarians should use a database to manage text and spreadsheets to manipulate numbers.

- **Local and network services**

When one learns how to use networked resources effectively one begins to learn the possibilities of sharing data and information. The most common networked environment is as close as one's desktop computer. It is most likely connected to other computers in your library through some sort of Ethernet connection. One of the other Ethernet connections is most likely a file server. This server's (computer's) sole purpose in life is to act as a repository for data one creates and generates. Since not all the information one creates and generates is necessarily written for just one person, the local file server provides the means to allow some people to view the information while others cannot. Librarians should learn how to save information on the file server in such a way that the people who are supposed to see it can and the people who are not supposed to see it don't. While this seems contrary to the nature of librarianship, it is a reality. The Internet is the basis of networked information resources. This network currently represents the state-of-the-art when it comes to sharing data between individuals and groups.

3.5 The European Computer Driving Licence (ECDL) and the International Computer Driving Licence (ICDL)

The ICDL is proof of the ability to use a computer and its most popular applications. The ICDL is an end-user standard out-and-out test. No programming is taught. Candidates have to pass tests in each of the seven modules, and the level of competency is high. To obtain the ICDL a candidate must demonstrate practical proficiency in each of the most commonly used software tools. The candidate has to pass all seven modules at a very high level, in some cases as high as 80 %. The standards for the ICDL have been set jointly by the major European Computer Societies. In Europe it is known as the European Computer Driving Licence (ECDL).

The ICDL is the only European computer recognised IT qualification at present. Worldwide the European Computer Driving Licence Foundation administers the ICDL. In Southern Africa the Computer Society of South Africa (CCSA), that has established the ICDL Foundation for South Africa for this purpose, administers it (Computer Society of South Africa 2002).

3.5.1 The ECDL

The European Computer Driving Licence (ECDL) certifies that the holder has knowledge of the basic concepts of IT and is able to use a personal computer and common computer applications at a basic level of competence. In practice the ECDL certificate indicates that the holder has passed one theoretical test that assesses their knowledge of the basic concepts of IT, and six practical-based tests which assess the holder's basic competence in using a personal computer and working with common computer applications (ECDL Foundation 1999: 3).

The ECDL is an internationally accepted certificate. It can simplify employment procedures and assure the employer that those applicants and staff have the necessary level of knowledge and competence to use common computer applications. The ECDL is a certificate of knowledge and proven competence and is based on a single agreed syllabus. The overall objective of the ECDL programme is an improvement in the level of basic knowledge about IT and a higher level of basic competence in using personal computers and common computer applications throughout Europe and internationally. The ECDL is deployed and monitored by the European Computer Driving Licence Foundation (ECDL-F). The role of the Foundation is to promote and co-ordinate the development of the ECDL concept. The ECDL-F is the guarantor of the ECDL standard and the Foundation ensures that the ECDL is administered in an equitable manner throughout Europe and internationally. Its role has now developed to cover the ICDL.

The ECDL concept is owned by the ECDL-F. The Foundation is a not for profit organisation that licenses a national Licensee to use the ECDL concept and establish an ECDL dissemination programme in that country. Within Europe the national

Licensee must be a member of the Council of European Professional Informatics Societies (CEPIS). Outside Europe the ECDL foundation will license organisations qualified by the ECDL-F as Licensees.

3.5.2 The ICDL

3.5.2.1 Objectives of the ICDL

The objectives of the ICDL are:

- To promote and encourage computer literacy for all;
- To raise the level of knowledge about IT and the level of competence in using personal computers and common computer applications for all citizens within Europe and internationally;
- To ensure all computer users understand best practices and the advantages of using a personal computer;
- To increase the productivity of all employees who need to use computers in their work;
- To enable better returns from investments in IT; and
- To provide a basic qualification which will allow all people, regardless of their background, to be part of the Information Society (ECDL Foundation 1999: 4).

3.5.2.2 Benefits of the ICDL

The benefits of the ICDL are:

- An IT skill qualification for everyone;
- An innovative and tangible method of skill measurement and validation;
- A model for education and training in the Information Society;
- A highly effective training delivery model;
- Greater public awareness of the benefits of active participation in the information Society; and
- A flexible and accessible qualification that offers increased mobility to holders (ECDL Foundation 1999: 4).

3.5.2.3 The ICDL's base in the ECDL syllabus

The purpose of the ECDL syllabus is to list the knowledge areas and items and skills sets and task items covered by the ECDL standard and to express in general terms the level of knowledge and skill required to achieve the ECDL standard. The ECDL standard is based on the computer user knowing certain basic facts about IT and having the basic knowledge and skills to use a personal computer and its software application to carry out everyday tasks. The knowledge areas and skills sets necessary to be mastered in the ECDL standard are described in the ECDL syllabus. The ECDL syllabus consists of the following module domains:

- Module 1** *Basic Concepts of Information Technology (IT)*, requires the candidate to know about the basic physical make-up of a personal computer and understand some of the basic concepts of IT such as data storage and memory, the context for computer-based software applications in society, and the uses of information networks within computing. The candidate shall also appreciate how IT systems are found in everyday situations, and how personal computers can affect health. The candidate shall be aware of some of the security and legal issues associated with computers.
- Module 2** *Using the Computer and Managing Files*, requires the candidate to demonstrate knowledge and competence in using the basic functions of a personal computer and its operating system. The candidate shall be able to operate effectively within the desktop environment. He or she shall be able to manage and organise files and directories or folders and know how to copy, move and delete files and directories or folders. The candidate shall demonstrate the ability to use search features, simple editing tools and print management facilities available within the operating system.
- Module 3** *Word Processing*, requires the candidate to demonstrate the ability to use a word processing application on a personal computer. He or she shall understand and be able to accomplish basic operations associated

with creating, formatting and finishing a word processing document ready for distribution. The candidate shall demonstrate competence in using some of the more advanced features associated with word processing applications such as creating standard tables, using pictures and images within a document, importing objects and using mail merge tools.

Module 4 ***Spreadsheets***, requires the candidate to understand the basic concepts of spreadsheets and to demonstrate the ability to use a spreadsheet application on a personal computer. He or she shall understand and be able to accomplish basic operations associated with developing, formatting and using a spreadsheet. The candidate shall be able to accomplish standard mathematical and logical operations using basic formulas and functions. The candidate shall demonstrate competence in using some of the more advanced features of a spreadsheet application such as importing objects, and creating graphs and charts.

Module 5 ***Database***, requires the candidate to understand the basic concepts of databases and demonstrate the ability to use a database on a personal computer. The module is divided in two sections; the first sections tests the candidate's ability to design and plan a simple database using a standard database package; the second section requires the candidate to demonstrate that they can retrieve information from an existing database by using the query, select and sort tools available in the database. The candidate should also be able to create and modify reports.

Module 6 ***Presentation***, requires the candidate to demonstrate competence in using presentation tools on a personal computer. The candidate shall be able to accomplish basic tasks such as creating, formatting and preparing presentations for distribution and display. The candidate shall demonstrate the ability to create a variety of presentations for different target audiences or situations. The candidate shall

demonstrate the ability to accomplish basic operations with graphics and charts and to use various slide show effects.

Module 7 *Information and Communication*, is divided in two sections. The first section, *Information*, requires the candidate to accomplish basic Web search tasks using a Web browser application and available search engine reports. The second section, *Communication*, requires the candidate to demonstrate their ability to use electronic mail software to send and receive messages, to attach documents or files to a message and to organise and manage message folders or directories within electronic mail software (ECDL Foundation 1999: 6-7).

3.5.3 Who recognises the ICDL in South Africa?

Worldwide, especially in Western Europe many of the largest employers and mostly prominent academic institutions have recognized the ICDL as a desirable standard for computer literacy. In South Africa the ICDL is new, and is rapidly gaining recognition. Most international organisations, technikons and universities in South Africa give recognition and credit for the ICDL (Computer Society of South Africa 2002).

3.5.3.1 International organisations in South Africa

The following international organisations recognize the ICDL (Computer Society of South Africa 2002):

ABSA, Allied Irish Bank, Belgian Bankers Association, De Beers Consolidated Mines, DHL, Dunlop Africa Group, ESSO, Guinness, IBM, KPMG, Lever/Elida Faberge, Motorola, Nortel, Old Mutual, Rolls Royce, Sanlam, SAS, Shell, Siemens, Nirdorf, Telenor, Volvo and VW.

3.5.3.2 Technikons in South Africa

Technikons that recognize the ICDL include:

Border Technikon, Boston City Campus, Port Elizabeth Technikon and Pretoria Technikon.

3.5.3.3 Universities in South Africa

Universities that recognize the ICDL include:

Rand Afrikaans University (RAU), Rhodes University, UNISA, University of Cape Town (UCT), University of Natal, University of the Orange Free State and University of Witwatersrand (Wits).

3.5.4 Training and testing centres for the ICDL in KwaZulu-Natal

Once a candidate has passed all seven modules they obtain a Skills Card. The Skills Cards are then sent to the ICDL Foundation who issues the International Computer Driving Licence Certificate. The following tertiary institutions in KwaZulu-Natal are training centres: the University of Natal, Durban, the University of Natal, Pietermaritzburg and the University of Zululand, Richards Bay. All of these universities provide training not just for their staff but also for the general public (Computer Society of South Africa 2002).

3.6 Summary

Various aspects of the subject of the study have been surveyed in this literature review. These include ICT and universities, ICT and the academic library, computer literacy, the International Computer Driving License and the European Computer Driving License. Where relevant, significant points identified in the literature review will be drawn on in the interpretation of the results of this study.

Chapter 4

Research methods used

In this chapter, the research methods chosen to investigate the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal are described.

4.1 Choice of method

A two-pronged method of data collection was adopted. The two methods used were the search for and review of the relevant literature, and the survey by self-administered questionnaire of the population of subject librarians.

4.1.1 The literature search and review

A literature survey is a necessary component of any research conducted in the social sciences for several reasons. The search for relevant literature enables the researcher to find out what else has been done in relation to the problem to be investigated and makes duplication of existing studies less likely (Aitchison 1998: 58). In addition, important understandings and insights necessary for the development of a logical framework into which the problem fits can be gained (Gay 1976: 24). Research methods used and evaluated in similar studies can be examined and their suitability for the study in hand can be assessed (Gay 1976:24). A familiarity with related research also makes the interpretation of the results of the study more meaningful, as they can be discussed in the light of what has gone before (Gay 1976: 25).

The literature search for this study was conducted to collect information about the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal. The literature review is not just important for the reasons Gay (1976: 24-25)

gives for surveying the literature, but also because the recommendations made in the final chapter of this thesis are to some extent based on the literature reviewed in Chapter 3.

This study is exploratory in nature. It is intended to investigate the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal. Given the nature of the research problem and the purpose of the study, the most appropriate methodological approach for the study of the problem would be to conduct a survey. Busha and Harter (1980: 62) state that survey research is capable of collecting background information and hard-to-find data, and the researcher would not have the opportunity to motivate or influence the respondents' responses. Survey research shares similar characteristics common to most other research methods, but it also has certain important differences. For instance, survey research is used to collect contemporary data while historical research is concerned primarily with past data (Powell 1997: 58). Survey research is also differentiated from experimental research in that it provides less control for the research environment and, thus, it is not capable of establishing causal relationships.

According to Powell (1997: 58) survey research is better suited to studying, exploring and analysing relationships among a large number of, and geographically dispersed, cases. This is appropriate for this study with the six libraries under study located in different areas of KwaZulu-Natal (see Map p.xv).

4.1.2 Collecting information about the population

The descriptive method of research was selected. Gay (1976:123) defines this method as the collection of data in order to test hypotheses or to answer questions concerning the current status of the subject of the study. The latter alternative was relevant for the purpose of this study because it enabled the assembling of information about specific attributes of the population, as well as information about specific behaviours (Newell 1993: 99-100).

4.2 Population

According to Busha and Harter (1980: 55-57) the word 'population' refers to any group of persons, objects or institutions that have at least one characteristic in common. Several known features of the population to be surveyed are discussed below, including the size of the population, the employment status, professional status and the gender of the librarians.

4.2.1 Size of the population

The population consisted of 43 subject librarians at the six university libraries:

- Six at the University of Durban-Westville;
- 14 at the University of Natal Durban;
- 10 at the University of Natal Pietermaritzburg; and
- 13 at the University of Zululand.

The researcher was the 44th member of the population but decided that conscious or unconscious bias might enter into her completion of the questionnaire and that even if it did not, it could not be proved that it had not. She therefore, did not participate in the survey as a respondent.

The small size of the population made sampling unnecessary.

4.2.1.1 Possible problems with the size of the population

The very small size of the population could be a problem if data was gathered by means of mailed questionnaire because of the well-known phenomenon of a low response rate to that form of research instrument and because it would not be possible to generalize about results if responses were very low (Newell 1993: 96).

4.2.2 Known characteristics of the population

Known characteristics of the population included their employment, professional status and their gender.

4.2.2.1 Employment status

The populations surveyed were the subject librarians of the six university libraries in KwaZulu-Natal, South Africa. Both main and branch libraries were surveyed. However, since the subject librarians of each of the libraries under study perform different tasks a broad definition of what tasks subject librarians perform was adopted. Subject librarians are therefore, staff

who interact with students and staff, either in the form of one or a combination of answering reference queries, bibliographic instruction, faculty or (academic) department liaison such as collection development or cooperate cataloguing etc (Kaniki 1996).

4.2.2.2 Professional status

In order to perform these tasks, each of these librarians has professional training in librarianship. Since all of these librarians work in academic libraries they are also academic librarians at the university libraries of KwaZulu-Natal. The population was comprised of a Historically Advantaged Institution (HAI), the University of Natal and two Historically Disadvantaged Institutions (HDIs), the University of Durban-Westville and the University of Zululand.

4.2.2.3 Gender

The population consisted of both male and female subject librarians. The number of male and female librarians in each library's subject librarian unit were as follows:

- University of Durban-Westville's unit consisted of four females and two males.

- University of Natal Durban's unit consisted of 11 females and three males.
- University of Natal Pietermaritzburg's unit consisted of nine females and one male.
- University of Zululand's unit consisted of 13 females.

4.3 Instrumentation

The self-administered questionnaire was used for collecting the data needed for the study. The questionnaire was considered the more appropriate method for collecting data because of the advantages it provides when compared to other types of instruments. Apart from facilitating accessibility, since it permits wider geographical contacts, it can also facilitate the collection of large amounts of data and information in a relatively short period of time and is relatively inexpensive to administer (Powell 1997: 91). The fixed format of the questionnaire also helps to eliminate variations in the questioning process. As Dillman (2000: 32) states:

...the goal of writing a survey question for self-administration is to develop a query that every potential respondent will interpret in the same way, be able to respond accurately, and be willing to answer.

Also questionnaires normally give respondents a greater feeling of anonymity, which in turn encourages openness to questions and minimizes the interview bias. The objective of the questionnaire in this study was to elicit information on the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal.

4.3.1 The questionnaire

A 13 page, self-administered questionnaire (see Appendix 1) consisting mainly of limited option questions with some open questions, was designed to establish the ICT knowledge and skills of subject librarians at the six university libraries of KwaZulu-Natal.

4.3.1.1 Categories of information

The questionnaire consisting of 11 sections was designed to establish general information about the subject librarians as well as specific information relating to their ICT knowledge and skills. Questions (a) to (f) of Section 1 asked the respondents for background information such as the university library in which they worked, age, gender, professional qualifications and duties or tasks of their work. Questions (h) to (o) of Section 1 dealt with general computer usage and more importantly whether the respondents had an ICDL. Sections 2 to 9 were based on the ICDL syllabus modules, which were discussed in Chapter 3 since the ICDL is an international standard for assessing computer literacy. These sections were as follows:

- Section 2: File management
- Section 3: Windows / keyboard
- Section 4: Word processing
- Section 5: Spreadsheets
- Section 6 Databases
- Section 7: Presentations
- Section 8: E-mail
- Section 9: Internet

Questions in each of these sections tested the respondent's knowledge and skills regarding their performance of specific operations. Questions relating to training and the problems respondents had with each section or application were also included. Sections 4 to 9 asked respondents to list the software they used for each section.

The following sections 10 and 11, although they do not fall within the scope of the ICDL syllabus were included on the basis of their importance, which was established in the literature review (Chapter 3).

- Section 10: Networking
- Section 11: Setup, maintenance and troubleshooting

4.3.1.2 Forms of questions

Fink and Kosecoff (1998: 9) explain that survey questions may be forced choice or open-ended. Newell (1993: 101-103) also distinguishes between two types of questions commonly used in questionnaires. These are closed and open questions. Both types were used in the study.

4.3.1.2.1 Closed questions (forced-choice)

Closed questions are drafted in advance, complete with all possible answers, which could be given (Newell 1993: 101). Advantages of the closed questions (or limited option questions as they are also called) are that they can be pre-coded and responses can easily be entered in a computer, saving time and money and they are less time-consuming for the respondent to complete (Newell 1993: 101). Disadvantages of the closed questions are that they force the respondent to choose between the answers provided (Newell 1993:102). To overcome this limitation a general question about problems experienced was added to each section of the questionnaire.

Most of the questions in the data-gathering instrument were closed or limited option questions. In the present study the researcher used closed questions, which forced the respondents to choose between a “yes”, “no” and “uncertain” option.

4.3.1.2.2 Open questions (open-ended)

Newell (1993: 102) describes open questions as those that allow individuals to respond in any way they wish. Open questions were used in the questionnaire where the range of options could not be predicted.

Newell (1993: 103) points out the drawbacks of the open questions to respondents and researchers. The former are required to spend time considering and recording an answer and the latter might have to deal with responses that are ambiguous, wide-ranging and difficult to categorize as well as time-consuming to code and analyse. This view is supported by Fink and Kosecoff (1998: 9) who suggests that forced-

choice questions with several choices, are easier to score than open-ended, short answer, essay questions. Open-ended questions give the respondent an opportunity to state a position in their own words. Unfortunately, these words may be difficult to interpret and for this reason constant analysis can be labour intensive.

4.3.2 Pre-testing the questionnaire

Powell (1997) stresses the importance of pre-testing a questionnaire:

A pretest gives the researcher an opportunity to identify questionnaire items that tend to be misunderstood by the participants, do not obtain the information that is needed etc.... The pre-test offers certain advantages beyond helping to refine the data collection instrument. It can permit a preliminary testing of the hypothesis, point out a variety of problems not anticipated relating to design and methodology, facilitate a practice run of the statistical procedures to be used, and perhaps even indicate that the final study may not produce any meaningful results and therefore should be rethought or abandoned.

4.3.2.1 Population for the pre-test

The instrument was pre-tested on three lecturers from the Information Studies Discipline at the School of Human and Social Studies, University of Natal Pietermaritzburg, to examine the clarity, content validity, and relevance of the questions. These lecturers were chosen because they were all professional librarians who worked at an academic institution.

4.3.2.2 Administering the pre-test

The questionnaire was sent via e-mail on the 20 of June 2002 to the lecturers. The pre-test population was given two weeks from this date to complete the questionnaire. A reminder was sent out towards the end of the first week. All three lecturers pre-tested the questionnaire, and mailed a printed copy to the researcher.

4.3.3 Changes resulting from the pre-test

Minor changes, in the form of spelling and grammatical errors in the cover letter and questionnaire, were corrected before the questionnaire was administered on the target population.

4.3.4 Administering the questionnaire

Once the design of the questionnaire has been completed and checked, a copy of the covering letter (see Appendix 2) and the questionnaire (see Appendix 1) were mailed to all the members of the population using the lists of names and addresses that were obtained from the deputy librarians of the Universities of Durban-Westville, Natal Durban and Zululand on the 5 July 2002. Since the researcher is a subject librarian at the University of Natal Pietermaritzburg Library it was not necessary to obtain the names and addresses of the other subject librarians at the University of Natal Pietermaritzburg Library. The cover letter explained the purpose of the study briefly, while the front page of the questionnaire included the instructions on how to complete the questionnaire. It also requested recipients to complete the questionnaire and return it to the researcher by 2 August 2002 or earlier if possible, using the self-addressed envelope provided for this purpose.

Fortunately, the internal mailing service between the University of Durban-Westville and the University of Natal, Durban and Pietermaritzburg campuses, allowed respondents to return the completed questionnaires via the internal mail service. The University of Zululand respondents, where given a stamped self-addressed envelope and therefore had to return their completed questionnaires via the regular postal services.

The response rate was initially low and only 17 questionnaires were completed and returned by the due date. Therefore, the researcher extended the deadline for completing the questionnaire by one week to 9 August 2002. Of the 43 questionnaires that were sent out 31 were returned, yielding a response rate of 72.1 %.

4.4 Data analysis

In this study the methods for data analysis were determined by the type of data collected, the purpose for which the study was conducted, and to meet the objectives. A coding key was prepared in which numerical values were assigned to all limited answer options in the questionnaire. The data was entered on a data matrix designed using SPSS². The data relating to limited option questions was then processed in terms of frequency counts and percentages.

Content analysis was used to interpret the responses to open questions. Gay (1976: 137) describes content analysis as the systematic, quantitative description of the composition of the object of the study and he distinguished between simple content analysis involving frequency counts and more complex analysis that might be used to investigate bias in a text.

The data is presented in Chapter 5 in both quantitative form using descriptive statistics and qualitative form.

4.5 Evaluation of the method used

The validity of a study refers to its ability to measure what it sets out to measure (Newell 1993: 99). A factor that should be taken into account when considering the validity of a study is sensitivity (Newell 1993: 106-107) which leads to respondents over-reporting what they perceive as desirable behaviours. This has to be considered as a distinct possibility because most of the subject librarians know the current value placed on ICT knowledge and skills in librarianship. Gathering data from a small population by means of a postal questionnaire that has to be completed by individuals who have no way of verifying whether their understanding of a question is what the researcher intended, may seem inferior to other data gathering techniques such as interviews.

² SPSS used to be called the Statistical Package for the Social Sciences. However, the name of the product is no longer viewed as an acronym, and is now simply 'SPSS' (London 2002). The letters form the name and do not stand for individual words.

However, a lack of understanding of the questions asked by the questionnaire, also indicated a low level of ICT knowledge and skill on the part of respondents. As far as the reliability of the study is concerned, its ability to obtain similar results if the same questions and a similar population were used (Newell 1993: 99) could be tested. It would be feasible to administer the questionnaire to other librarians throughout South Africa, because the questionnaire was designed around an international standard, the ICDL.

4.6 Summary

The need to gain pertinent information about the ICT knowledge and skills of the subject librarians resulted in a data gathering strategy consisting of a questionnaire survey. The questionnaire has been described in this chapter and evaluated.

Chapter 5

Results of the survey

The results of the survey of the population of subject librarians, which was conducted by means of a self-administered questionnaire, are reported in this chapter. The purpose behind each question that was asked is explained and the results are reported.

5.1 Response rate

Of the 43 questionnaires distributed, 31 were returned indicating a response rate of 72.1 %³. This relatively high response rate for a mailed questionnaire is possibly explained by the fact that some of the questionnaires were delivered in person to members of the study population. Also, contact was made with certain individuals in each university's subject librarian unit and these individuals returned the questionnaires to the researcher.

5.2 Questionnaire results

In line with the intentions of the research (see 4.1.1), the results are reported under broad headings for each of the 11 sections of the questionnaire. Section one of the questionnaire looks at the demographics of the population. While sections two to 10 examines the population's ability to perform certain operations and functions using various software applications. Section 11 examines the population's ability to perform certain operations and functions with computer hardware. Each section also has questions that relate to the training and problems experienced by the population.

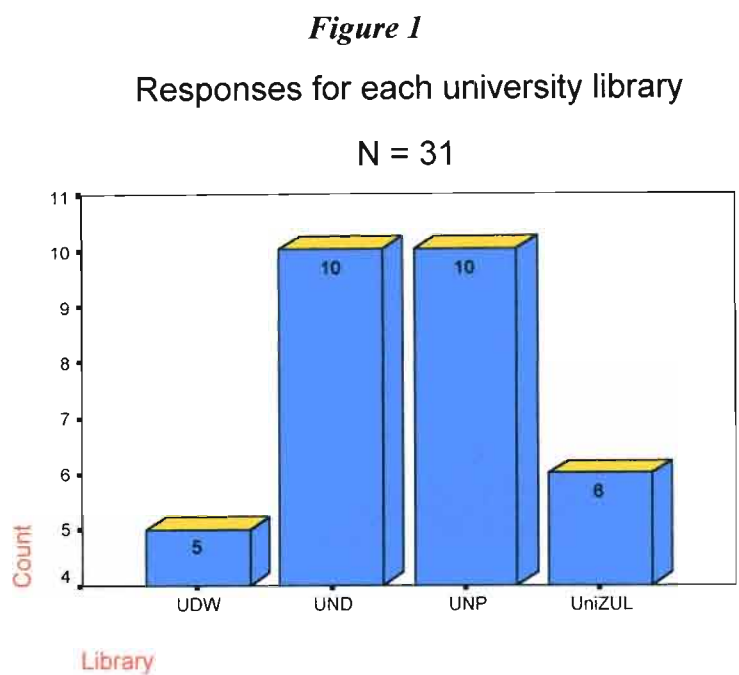
³ All percentages have been rounded off to one decimal place.

5.2.1 Section 1 - General information

The information in this section deals with the demographics of the population.

5.2.1.1 University libraries

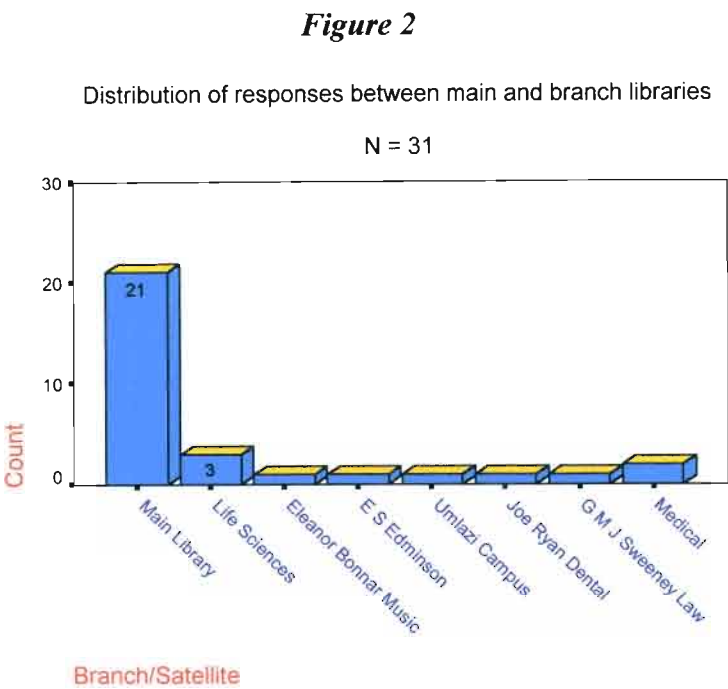
The number of subject librarians from each library who responded to the questionnaire is indicated in Figure 1.



The highest number of responses was from UNP with 10 or 32.3 % of the total possible responses and UND with 10 or 32.3 % of the possible responses. Followed by UniZUL with six or 19.4 % of the possible responses and the about to be merged with UDW had five or 16.1% of the possible response. Ten subject librarians out of a total of 10 (100 %) completed the questionnaire at UNP, thus all the subject librarians at UNP had completed the questionnaire. Ten subject librarians out of a total of 14 (71.4 %) completed the questionnaire from UND. Six subject librarians out of a total of 13 (46.2 %) completed the questionnaire at UniZUL. Five subject librarians out of a total of six (83.3 %) completed the questionnaire from UDW.

5.2.1.2 **Branch or satellite libraries**

Question 1 (b) was asked to determine whether the subject librarians worked in the main library or branch and satellite libraries and Figure 2 reflects the findings.



Of the subject librarians who responded to the questionnaire 21 or 67.7 % worked in the main library of their institution. Three worked at the Life Sciences Library of UNP. Two worked at the Medical School Library of UND. One each worked at the Eleanor Bonnar Music Library and at the E S Edminson Library of UND, the Umlazi Campus Library of UniZUL, the Joe Ryan Dental Library at UDW and the G M J Sweeney Law Library of UND. The Law Library at UNP is not reflected in the above figure since the subject librarian who facilitates the branch is stationed at the main library of UNP.

5.2.1.3 Gender and Age

The findings concerning the age and gender of the respondents are presented in a cross tabulation in Table 1.

Table 1

Age and gender cross tabulation

Count		QUES1(d) Age				Total
Age and gender		20-29	30-39	40-49	50+	
QUES1(c)	Female	1	9	10	6	26
Gender	Male		2	2	1	5
Total		1	11	12	7	31

There were 26 or 83.9 % female subject librarians who responded to the questionnaire. The highest number of female subject librarians was between the ages of 40-49 at 10, followed by 30-39 at nine, 50+ at six and 20-29 at one.

Of the small minority of potentially six male subject librarians five or 16.1 % responded to the questionnaire. Two were between the age of 30-39 and 40-49 respectively and one was 50 years or older.

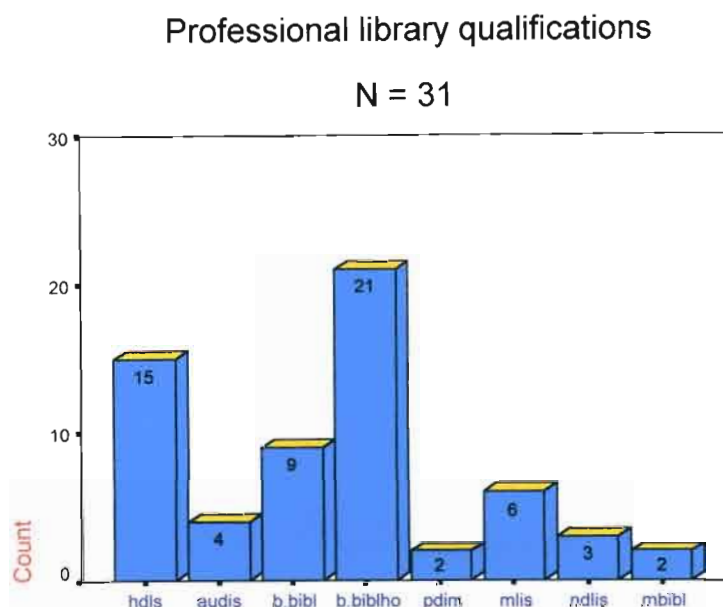
Therefore, of the 31 subject librarians who responded 23 were between the ages of 30-49 and seven were 50 years or older with a majority of female subject librarians.

5.2.1.4

Professional qualifications

Question 1 (e) was asked to determine the education and training levels of the subject librarians. The librarians could give more than one response.

Figure 3



Key:

- hdis = Higher Diploma in Library Science
- audis = Advanced University Diploma in Library and Information Studies
- b.bibl = Bachelor of Library Science
- b.biblho = Bachelor of Library Science Honours
- pdim = Postgraduate Diploma in Information Management
- mlis = Master in Library and Information Studies
- ndlis = National Diploma in Library Science
- mbibl = Master of Library Science

The most commonly held qualification was the Bachelor of Library Science Honours Degree (B.Bibl. (Hons)) at 21 or 33.9 %, held by just over a third of the respondents. Of these subject librarians 19 or 30.7 % had a postgraduate diploma in the form of the Higher Diploma in Library Science (HDLS) (15 or 24.2 %) the Advanced University Diploma in Library and Information Studies (AUDIS) (four or 6.5 %) with nine or

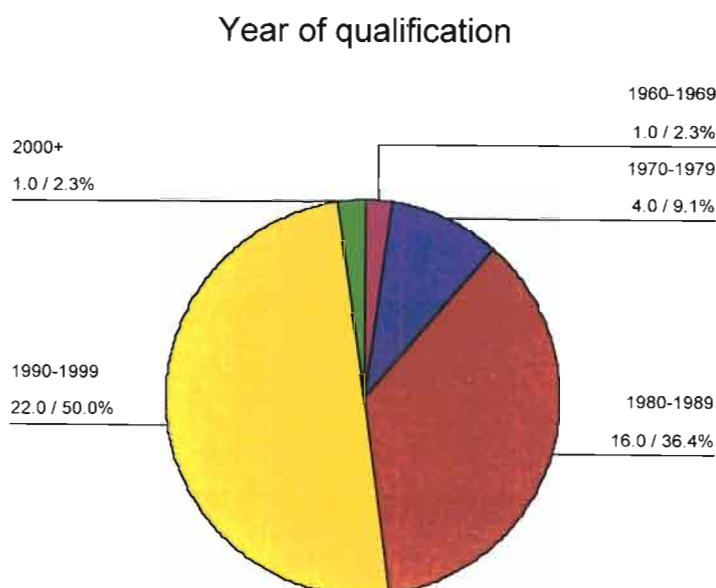
14.5 % holding the equivalent Bachelor of Library Science (B.Bibl.) In spite of the high proportion of B.Bibl. (Hons) graduates only eight or 12.9 % had a Masters in Library and Information Studies. Two technikon diplomas, the Postgraduate Diploma in Information Management (PDIM) and National Diploma in Library Science (NDLIS) were held by five or 8 % of the subject librarians respectively

5.2.1.5 Year of qualification

The subject librarians obtained their professional qualifications between the years 1960 and 2000 as reflected in Figure 4. This covers a 40 year range.

Figure 4

N = 31



Of the 31 subject librarians who responded to the questionnaire half, 22 or 50 %, had obtained the above qualifications during 1990-1999, followed by 16 or 36.4 % in 1980-1989, four or 9.1 % in 1970-1979 and one or 2.3 % in 1960-1969 and 2000+ respectively.

5.2.1.6 Main tasks or duties performed by subject librarians

Subject librarians were asked to identify what main tasks or duties they performed at work. Subject librarians could give more than one response.

Table 2

N = 31

Main tasks

Tasks	Yes
	No and %
user education	24 (77.4%)
collection development	21 (67.7%)
cataloguing	18 (58.1%)
reference work	17 (54.8%)
literature searching	15 (48.4%)
classification	15 (48.4%)
academic liaison	9 (29%)
staff supervision	8 (25.8%)
administrative tasks	6 (19.4%)
branch facilitator	5 (16.1%)
manage e-journals	2 (6.5%)
staff training and development	2 (6.5%)
manage guides	2 (6.5%)
curriculum development	2 (6.5%)
reading services	1 (3.2%)
manage dialog	1 (3.2%)
manage website	1 (3.2%)

Very few of the tasks were ICT related, in fact only the management of e-journals, ICT and a library website were ICT related. Compared with the other tasks and duties these were only performed to a small extent. The management of e-journals 6.5 %, followed by the management of ICT and a website at one or 3.2 % respectively. Most of the tasks related to the “traditional” duties of subject librarians with user education appropriately scoring the highest at 24 or 77.4 %, followed by collection development 21 or 67.7 %, cataloguing 18 or 58.1 %, reference work 17 or 54.8 %, classification and literature searching 15 or 48.4 %, academic liaison 9 or 29 %, staff supervision 8 or 25.8 %, administrative tasks 6 or 19.4 %, branch facilitator 5 or 16.1 %, staff training and development, curriculum development, management of guides

2 or 6.5 %, and reading services and the management of dialog one or 3.2 %.

5.2.1.7 Access to a home computer

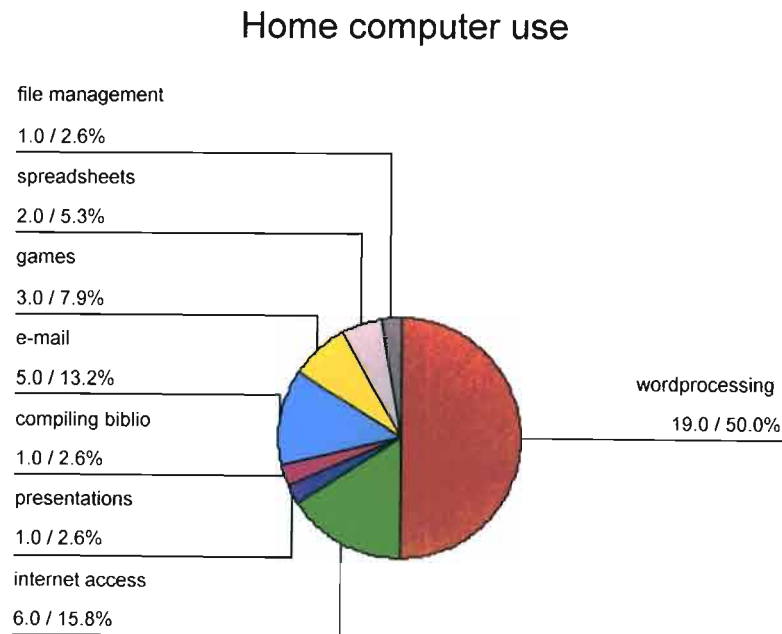
Question 1 (g) asked whether subject librarians had access to a home computer. Of the subject librarians who responded to the questionnaire 22 or 71% had access to a home computer, while nine or 29 % did not.

5.2.1.8 Home computer use

Question 1 (g) asked the above 71 % of subject librarians who had access to a home computer what they used their home computer for. More than one response was possible.

Figure 5

N = 22



Home computers were mainly used for word processing by half, 19 or 50 %, of the subject librarians. This was followed by six or 15.8 % of the subject librarians who used their home computer for Internet access and five or 13.2 % used their home

computer for e-mail. Of the above 22 or 71 % of the subject librarians, three or 7.9 % used their computers for games and only two or 5.3 % for spreadsheets. Only one subject librarian or 2.6 % in each instance used their computer for file management, compiling bibliographies and presentations.

5.2.1.9 Use of a computer in the course of duties or tasks at work

Question 1 (h) asked the subject librarians whether they used a computer in the course of their duties or tasks at work. Of the subject librarians who responded to the question a majority of 29 or 93.5 % used a computer in the course of their duties or tasks at work, while two or 6.5 % did not.

5.2.1.10 Work computer use

Question 1 (h) was asked to determine what the 93.5 % of the subject librarians who did use a computer in the course of their duties or tasks, were using a computer for. More than one response was possible.

Table 3
N = 29

Tasks relating to work computer use		
Tasks	Use	
	Count	%
database searching information retrieval	22	73.3%
word processing	17	54.8%
e-mail	16	51.6%
internet access	15	48.4%
classification	9	29.0%
cataloguing	9	29.0%
user education	7	22.6%
presentations	4	12.9%
spreadsheets	3	9.7%
data capture	3	9.7%
web page	2	6.5%
web ct	1	3.2%

The majority of these subject librarians, almost three quarters, 22 or 73.3 %, used their work computer for database searching, followed by 22 or 71 % for information retrieval. Just over half, 17 or 54.8 %, used their work computer for word processing and 16 or 51.6 % used it for e-mail. Less than half these subject librarians, 15 or 48.4 % used their computer for Internet access, while nine or 29 % used it for classification and cataloguing respectively. Only seven or 22.6 % of these subject librarians used their work computer for user education, while four or 12.9 % used it for presentations, three or 9.7 % for spreadsheets and database capture respectively and two or 6.5 % for their web page and one or 3.2 % for web ct courses.

5.2.1.11 Own work computer

Question 1 (i) was asked to establish whether subject librarians had access to their own work computer or whether they had to share a computer with colleagues. Of the subject librarians who responded to the questionnaire a majority of 30 or 96.8 % had their own work computer, except one or 3.2 % of the respondents who shared a computer with colleagues.

5.2.1.12 Make of computer used at work

Question 1 (j) asked about the computer hardware that was being used by subject librarians. It was also asked to determine the subject librarians' knowledge of the computer hardware they used. Of the subject librarians who responded 28 or 90.3 % use Dell computers with two or 6.5 % using Mecer computers while one or 3.2 % of the respondents did not respond to the question.

5.2.1.13 Model of the computer used at work

Like question 1 (j) above question 1 (k) was asked to determine the subject librarians' knowledge about the computer hardware they use. Of the subject librarians who responded only 11 or 35.5 % knew the make of the computer they used, while a very high almost two thirds of the respondents 20 or 64.5 % did not respond to the question.

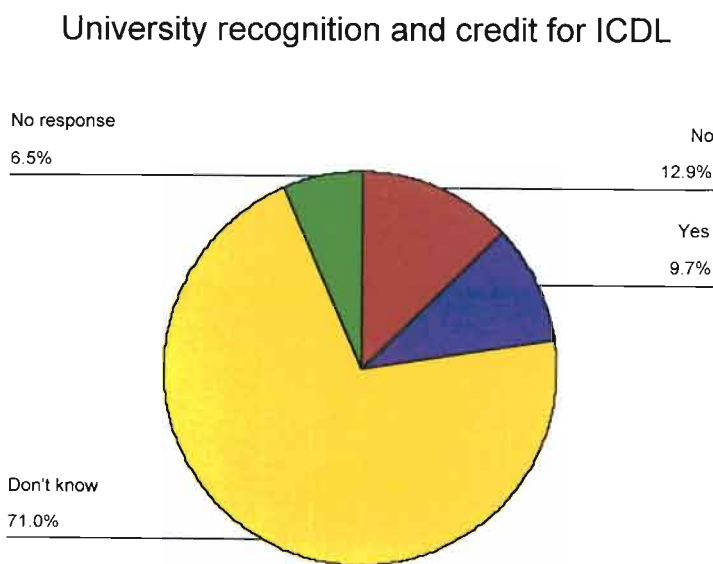
5.2.1.14 Possession of an ICDL

Question 1 (l) was asked to determine if the subject librarians had an ICDL. Of the subject librarians who responded to the questionnaire only three or 9.7 % had obtained the ICDL, while 25 or 80.6 % did not have an ICDL and three or 9.7 % did not respond to the question.

5.2.1.15 University recognition and credit for the ICDL

Question 1 (m) asked whether or not the subject librarians knew if their institutions gave recognition and credit for the ICDL.

Figure 6
N = 29



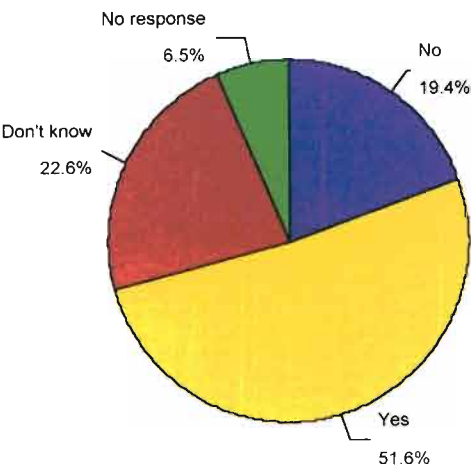
Of the subject librarians who responded to the questionnaire the majority, 22 or 71 %, did not know whether their institution gave recognition and credit for the ICDL. Also, two or 6.5 % of the respondents did not respond to the question, while or three 9.7 % did know, and four or 12.9 % answered *No*.

5.2.1.16 University training for the ICDL

Question 1 (n) asked the subject librarians if they knew whether their institutions provided training for the ICDL. The subject librarians’ responses are reflected in Figure 7.

Figure 7
N = 29

University training for the ICDL



Of the subject librarians who responded half, 16 or 51.6 %, were aware of their institutions providing training, while seven or 22.6 % did not know whether their institution provided training and six or 19.4 % answered *No* to the question. Therefore, two or 6.5 % did not respond to the question.

5.2.2 Section 2 - File management

The information in this section deals with file management functions and operations, training and problems experienced by subject librarians.

5.2.2.1 File management functions and operations

Questions 2 (a-j) were asked to establish the subject librarians knowledge and skill regarding file management functions and operations. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the file management functions and operations listed in Table 4. The functions are arranged in descending order in relation to the *Yes* responses.

Table 4

Functions relating to file management N = 31

Function	No		Yes		Uncertain		No response	
	Count	%	Count	%	Count	%	Count	%
Copy a file from a drive	1	3.2%	29	93.5%	1	3.2%		
Move around directories	2	6.5%	28	90.3%	1	3.2%		
Use virus checker	3	9.7%	28	90.3%				
Copy a file onto a drive	2	6.5%	28	90.3%	1	3.2%		
Save a file	4	12.9%	27	87.1%				
Identify drives	2	6.5%	26	83.9%	2	6.5%	1	3.2%
Name files	5	16.1%	23	74.2%	2	6.5%	1	3.2%
Locate files	3	9.7%	23	74.2%	5	16.1%		
Create a directory	4	12.9%	22	71.0%	5	16.1%		
Search for files	9	29.0%	17	54.8%	5	16.1%		

Of the subject librarians who responded to the questionnaire 29 or 93.5% could copy a file from a drive and 28 or 90.3 % of them could move around directories, use the virus checker and copy a file onto a drive respectively. Followed by 27 or 87.1 % could save a file, 26 or 83.9 % could identify drives, 23 or 74.2 % could name and locate files respectively, 22 or 71% could create a directory and 17 or 54.8 % could search for files.

5.2.2.2 File management training

Table 5 reflects the responses to question 2 (k), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses in file management.

Table 5

File management training

Training	Frequency	Percent
Valid No	20	64.5
University of Natal introduction to windows course	6	19.4
University of Durban-Westville European Union course	2	6.5
DOS file management course	1	3.2
PC engineering course	1	3.2
A+ course	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire 20 or 64.5 % had not had any formal training in file management. Of the subject librarians who had received formal training in file management six or 19.4% had attended a University of Natal introduction to windows course, two or 6.5 % a University of Durban-Westville European Union course, one or 3.2 % an A+ course, a DOS file management course and a PC (Personal Computer) engineering course respectively.

5.2.2.3 File management problems

Question 2 (l) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to file management. These problems are reflected in Table 6.

Table 6

File management problems

Problem	Frequency	Percent
Valid No response	23	74.2
Understanding of file management concepts	2	6.5
Ordering of files	2	6.5
Understanding the difference between drives and directories	1	3.2
Understanding terminology	1	3.2
Locating files using DOS	1	3.2
Understanding the purpose of file management	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 23 or 74.2 % did not respond to this question. Only two or 6.5% had problems with ordering files and understanding file management concepts respectively. Only one or 3.2 % subject librarian experienced difficulties with understanding the difference between drives and directories, understanding the purpose of file management, understanding terminology and locating files using DOS respectively.

5.2.3 Section 3 – Windows and keyboard

The information in this section deals with windows and keyboard functions and operations, training and problems experienced by subject librarians.

5.2.3.1 Windows and keyboard functions and operations

Questions 3 (a-u) were asked to establish the subject librarians knowledge and skill regarding windows and keyboard functions and operations. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the windows and keyboard functions and operations listed in Table 7. The functions are arranged in descending order in relation to the *Yes* responses.

Table 7

Functions relating to windows and keyboard N = 31

Function	No		Yes		Uncertain		No response	
	Count	%	Count	%	Count	%	Count	%
Use mouse			31	100.0%				
Click and drag			31	100.0%				
Identify icons			31	100.0%				
Select open icon			31	100.0%				
Maximise and minimise			31	100.0%				
Open an application			31	100.0%				
Retrieve document-floppy disk			31	100.0%				
Retrieve document-hard disk			31	100.0%				
Name document			31	100.0%				
Save document			31	100.0%				
Exit from application			31	100.0%				
Use scroll bars			30	96.8%	1	3.2%		
Re-name document			30	96.8%	1	3.2%		
Edit, re-save document			30	96.8%	1	3.2%		
Work with more than one application			30	96.8%	1	3.2%		
Use control panel			29	93.5%	2	6.5%		
Activate, deactivate window			28	90.3%	3	9.7%		
Copy document			28	90.3%	3	9.7%		
Create folders	1	3.2%	28	90.3%	2	6.5%		
Save, open folders			28	90.3%	2	6.5%		
Identify what keys for	3	9.7%	27	87.1%	1	3.2%	1	3.2%

Of the subject librarians who responded to the questionnaire 31 or 100% could use a mouse, click and drag, identify icons, select open an icon, maximise and minimise, open an application, retrieve a document from a floppy disk and hard disk, name and save a document and exit from an application. Followed by 30 or 96.8 % who could use scroll bars, re-name, edit, re-save a document, work with more than one application and 29 or 93.5 % who could use the control panel. Finally, 28 or 90.3 % could activate, deactivate a window, copy a document, create, save and open folders and or 27 or 87.1 % could identify what certain keys were for. Thus very high scores were recorded for the *Yes* responses for the windows keyboard and functions and operations.

5.2.3.2 Windows and keyboard training

Question 3 (v) was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses in windows and keyboard functions and operations. The courses attended are reflected in Table 8.

Table 8

Windows and keyboard training			
Training		Frequency	Percent
Valid	No	11	35.5
	University of Natal introduction to windows course	9	29.0
	No response	3	9.7
	University of Zululand European Union course	2	6.5
	End-user computing course	1	3.2
	ICDL module	1	3.2
	A+ course	1	3.2
	Windows 95 course	1	3.2
	University of Durban-Westville European Union course	1	3.2
	Computer programming course	1	3.2
	Total	31	100.0

Of the subject librarians who responded to the questionnaire only 11 or 35.5 % had not had any formal training in windows or keyboard operations and three or 9.7 % did not respond to the question. Of the subject librarians who had received formal training in windows and keyboard functions and operations, nine or 29 % attended a University of Natal introduction to windows course, two or 6.5 % a University of Zululand European Union course and one or 3.2 % subject librarian a ICDL module, a Computer programming course, a End-user computing course, an A+ course, a Windows 95 course and a University of Durban-Westville European Union course respectively.

5.2.3.3 Windows and keyboard problems

Question 3 (w) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to windows and keyboard functions and operations. These problems are reflected in Table 9.

Table 9

Windows and keyboard problems

Problem	Frequency	Percent
Valid No response	24	77.4
System constantly changes	3	9.7
Qwerty keyboard design	2	6.5
Operating windows without a mouse	1	3.2
Aligning text	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of or 24 or 77.4 % did not respond to this question. Of the subject librarians who responded to the question, three or 9.7 % experienced difficulties with a system that constantly changes, two or 6.5 % with the qwerty keyboard design and one or 3.2 % with operating without a mouse and aligning text respectively.

5.2.4 Section 4 – Word processing

This section deals with the word processing functions and operations, software, training and problems experienced by subject librarians.

5.2.4.1 Word processing functions and operations

Questions 4 (a-t) were asked to establish the subject librarians knowledge and skill regarding word processing. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the word processing functions and operations listed in Table 10. The functions are arranged in descending order in relation to the *Yes* responses.

Table 10

Functions relating to word processing N = 31

Function	No		Yes		Uncertain	
	Count	%	Count	%	Count	%
Open file			31	100.0%		
Copy, move text			31	100.0%		
Save a file			31	100.0%	2	6.5%
Close a file			31	100.0%		
Create a file			30	96.8%	1	3.2%
Change font size			30	96.8%	1	3.2%
Change font style			30	96.8%	1	3.2%
Use Save As			30	96.8%	1	3.2%
Type formatted document			29	93.5%	2	6.5%
Change line spacing			29	93.5%	2	6.5%
Use spell checker	2	6.5%	29	93.5%		
Set margins			27	87.1%	4	12.9%
Add columns	2	6.5%	27	87.1%	2	6.5%
Use thesaurus	1	3.2%	26	83.9%	4	12.9%
Add clipart	2	6.5%	26	83.9%	3	9.7%
Use dictionary	2	6.5%	25	80.6%	4	12.9%
Insert date, time, page no.	1	3.2%	25	80.6%	5	16.1%
Create header or footer	3	9.7%	24	77.4%	4	12.9%
Set tabs	1	3.2%	23	74.2%	7	22.6%
Open document without a .doc	4	12.9%	20	64.5%	7	22.6%

The subject librarians who responded to the questionnaire responded to all the questions in this section therefore Table 10 does not have a *No response* column. Of the subject librarians who responded to the questionnaire 31 or 100 % could open a file, copy and move text, save, close, and create a file, while 30 or 96.8 % could create a file, change font size and style, use Save As, and 29 or 93.5 % could type a formatted document, change line spacing and use the spell checker. This was followed by 27 or 87.1 % who could set margins and add columns, while 26 or 83.9 % who could use the thesaurus and add clipart. Finally, 25 or 80.6 % could use the dictionary and insert date, time, page numbers, 77.4 % or 24 could create a header or footer, 23 or 74.2 % could set tabs and 20 or 64.5 % could open a document without a .doc extension. Thus high scores were recorded for the *Yes* responses for word processing functions and operations.

5.2.4.2 Word processing software

Question 4 (u) was asked to establish what word processing software subject librarians were using in each university library. Of the subject librarians who responded 22 or 71.8 % use Microsoft Word, while nine or 28.2 % use Corel Wordperfect.

5.2.4.3 Word processing training

Table 11 reflects the responses to question 4 (v), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses in word processing.

Table 11

Word processing training

Training	Frequency	Percent
Valid No	13	41.9
University of Natal word introductory course	9	29.0
University of Natal wordperfect introductory course	4	12.9
University of Zululand word workshop	3	9.7
ICDL module	1	3.2
No response	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire 13 or 41.9 % had **not** had any formal training in word processing and one or 3.2 % subject librarian did not respond to the question. Of the subject librarians who had received formal training for word processing nine or 29 % attended a University of Natal Word introductory course, four or 12.9 % a University of Natal Wordperfect course, three or 9.7 % a University of Zululand Word workshop and one or 3.2 % an ICDL module.

5.2.4.4 Word processing problems

Question 4 (w) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to word processing. These problems are reflected in Table 12.

Table 12

Word processing problems		
Problem	Frequency	Percent
Valid No response	24	77.4
Migrating from corel wordperfect to microsoft word	3	9.7
Indenting in microsoft word	2	6.5
Inserting date and time	1	3.2
Setting tabs	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 24 or 77.4 % did not respond to this question. Of the subject librarians who did respond to the question three or 9.7 % experienced difficulties with migrating from Corel Wordperfect to Microsoft Word, while two or 6.5 % had problems with indenting in Microsoft Word and one or 3.2 % with setting tabs and inserting date and time respectively.

5.2.5 Section 5 – Spreadsheets

This section deals with spreadsheet operations and functions, software, training and problems experienced by subject librarians.

5.2.5.1 Spreadsheet functions and operations

Questions 5 (a-q) were asked to establish the subject librarians knowledge and skill regarding spreadsheets. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the spreadsheet functions and operations listed in Table 13. The functions are arranged in descending order in relation to the *Yes* responses.

Table 13

Functions relating to spreadsheets N = 31

Function	No		Yes		Uncertain		No response	
	Count	%	Count	%	Count	%	Count	%
Enter data	7	22.6%	22	71.0%	2	6.5%		
Interpret information in spreadsheet	10	32.3%	17	54.8%	4	12.9%		
Create rows, columns, headings	10	32.3%	17	54.8%	3	9.7%	1	3.2%
Insert into a word processing document	13	41.9%	15	48.4%	3	9.7%		
Create tables and values	12	38.7%	14	45.2%	5	16.1%		
Copy using fill down or across	14	45.2%	14	45.2%	2	6.5%	1	3.2%
Create a graph	16	51.6%	14	45.2%	1	3.2%		
Format a cell or range	12	38.7%	13	41.9%	6	19.4%		
Insert columns and rows	15	48.4%	13	41.9%	3	9.7%		
Create a formula using functions	16	51.6%	11	35.5%	4	12.9%		
Create a formula using fill down or across	16	51.6%	11	35.5%	4	12.9%		
Use gridlines, headers, footers	18	58.1%	11	35.5%	2	6.5%		
Use text features for table cells	17	54.8%	11	35.5%	3	9.7%		
Protect a cell or range	16	51.6%	10	32.3%	5	16.1%		
Use hiding, freezing/splitting	19	61.3%	10	32.3%	2	6.5%		
Create a formula using indicator symbols	16	51.6%	7	22.6%	8	25.8%		
Understand order of operations	18	58.1%	6	19.4%	6	19.4%	1	3.2%

Of the subject librarians who responded to the questionnaire 22 or 71 % could enter data, 17 or 54.8 % could interpret information in a spreadsheet, create rows, columns, headings and 15 or 48.4 % could insert into a word processing document, while 14 or 45.2 % could create labels and values and a graph. This was followed by 13 or 41.9 % who could format a cell or range and insert columns and rows, while 11 or 35.5 % could create a formula using functions or fill down or across, use gridlines, headers, footers and use text features for label cells. Followed by 10 or 32.3 % who could protect a cell or range and use hiding freezing or splitting. Finally, seven or 22.6 % could create a formula using indicator symbols, while six or 19.4 % could understand the order of operations.

5.2.5.2 Spreadsheet software

Question 5 (r) was asked to establish what spreadsheet software subject librarians in each university library were using. Of the subject librarians who responded 26 or 84 % use Microsoft Excel, while five or 16 % use Corel Quattro Pro.

5.2.5.3 Spreadsheet training

Table 14 reflects the responses to question 5 (s), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses in spreadsheets.

Table 14
Spreadsheet training

Training	Frequency	Percent
Valid No	21	67.7
University of Natal excel	5	16.1
introductory course		
ICDL module	2	6.5
No response	2	6.5
Windows 95 course	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a relatively high percentage of 21 or 67.7 % subject librarians had not had any formal training in spreadsheets and two or 6.5 % did not respond to the question. Of the subject librarians who did respond to the question five or 16.1 % attended a University of Natal Excel introductory course, two or 6.5 % attended an ICDL module and one or 3.2 % a Windows 95 course.

5.2.5.4 Spreadsheet problems

Question 5 (t) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to spreadsheets. These problems are reflected in Table 15.

Table 15

Spreadsheet problems		
Problem	Frequency	Percent
Valid No response	21	67.7
No training	5	16.1
Forget functions because not used often	3	9.7
Formulas	1	3.2
Transferring data	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 21 or 67.7 % subject librarians did not respond to this question. Of the subject librarians who did respond five or 16.1 % considered no training a problem, while three or 9.7 % forget functions that are not used often and one or 3.2 % experienced difficulties with transferring data and formulas respectively.

5.2.6 Section 6 – Databases

The information in this sections deals with database operations and functions, software, training and problems experienced by subject librarians.

5.2.6.1 Database functions and operations

Questions 6 (a-j) were asked to establish the subject librarians knowledge and skill regarding databases. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the database functions and operations listed in Table 16. The functions are arranged in descending order in relation to the *Yes* responses.

Table 16

Functions relating to databases N = 31

Function	No		Yes		Uncertain	
	Count	%	Count	%	Count	%
Enter data	29	93.5%	2	6.5%		
Add a record	29	93.5%	2	6.5%		
Delete a record	29	93.5%	2	6.5%		
Sort records	29	93.5%	2	6.5%		
Search using "and", "or" or "not"	29	93.5%	2	6.5%		
Create multiple fields	29	93.5%	2	6.5%		
Create layout report	29	93.5%	2	6.5%		
Insert files into word processing documents	29	93.5%	2	6.5%		
Create layout to match form	29	93.5%	1	3.2%	1	3.2%
Create report with summaries	29	93.5%	1	3.2%	1	3.2%

The subject librarians who responded to the questionnaire responded to all the questions in this section therefore Table 16 does not have a *No response* column. The above questions relating to database functions and operations recorded an extremely low level of *Yes* responses. Of the subject librarians who responded to the questionnaire only two or 6.5 % could enter data, add and delete a record, sort records, search using “and”, “or” or “not”, create multiple fields, create a layout report

and insert files into word processing documents. Only one or 3.2 % could create a layout to match a form and create a report with summaries respectively.

5.2.6.2 Database software

Question 6 (o) was asked to establish what database software subject librarians in each university library were using. Of the subject librarians who responded 23 or 75 % use Microsoft Access, while eight or 25 % use Q + A.

5.2.6.3 Database training

Question 6 (p) was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses in databases. Of the subject librarians who responded to the questionnaire a high percentage of 25 or 80.6 % had not had any formal training in databases and a further five or 16.1 % subject librarians did not respond to the question. Only one or 3.2 % subject librarian had attended an ICDL module course.

5.2.6.4 Database problems

Question 6 (q) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to databases. All 31 or 100 % of the subject librarians did not respond to this question.

5.2.7 Section 7 – Presentations

The information in this sections deals with presentation operations and functions, software, training and problems experienced by subject librarians.

5.2.7.1 Presentation functions and operations

Questions 7 (a-u) were asked to establish the subject librarians knowledge and skill regarding presentations. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the presentation functions and operations listed in Table 17. The functions are arranged in descending order in relation to the *Yes* responses.

Table 17

Functions relating to presentations N = 31

Function	No		Yes		Uncertain		No response	
	Count	%	Count	%	Count	%	Count	%
Add text and images	9	29.0%	21	67.7%			1	3.2%
Duplicate text and images	8	25.8%	21	67.7%	1	3.2%	1	3.2%
Duplicate a slide	8	25.8%	21	67.7%	1	3.2%	1	3.2%
Use cut and paste to move a slide	8	25.8%	21	67.7%	1	3.2%	1	3.2%
Rotate or flip an object	8	25.8%	21	67.7%	3	9.7%	1	3.2%
Change attributes, colour, shapes	8	25.8%	21	67.7%	3	9.7%	1	3.2%
Apply shadow to shape	7	22.6%	21	67.7%	2	6.5%	1	3.2%
Create organisational chart	8	25.8%	21	67.7%	3	9.7%	1	3.2%
Preview using various views	9	29.0%	21	67.7%			1	3.2%
Choose automatic slide layout format	9	29.0%	20	64.5%	1	3.2%	1	3.2%
Re-order slides	8	25.8%	20	64.5%	3	9.7%	1	3.2%
Create different kinds of charts	10	32.3%	20	64.5%	3	9.7%		
Number slides	9	29.0%	20	64.5%			2	6.5%
Modify organisational chart	9	29.0%	19	61.3%	2	6.5%	2	6.5%
Add notes to slides	10	32.3%	18	58.1%	2	6.5%	1	3.2%
Use master slide	9	29.0%	17	54.8%	4	12.9%	1	3.2%
Add forms of shape	8	25.8%	17	54.8%	2	6.5%	1	3.2%
Add preset animation effects	11	35.5%	17	54.8%	2	6.5%	1	3.2%
Start a slide on any show	11	35.5%	17	54.8%	2	6.5%	1	3.2%
Hide slides	11	35.5%	16	51.6%	3	9.7%	1	3.2%
Use on-screen navigation	11	35.5%	15	48.4%	4	12.9%	1	3.2%

Of the subject librarians who responded to the questionnaire 21 or 67.7 % could add text and images, duplicate text images and a slide, use cut and paste to move a slide, rotate or flip an object, change attributes, colour and shapes, apply shadow to a shape, create an organisational chart and preview using various views. Followed by 20 or 64.5 % who could choose automatic slides layout format, re-order slides, create different kinds of charts, number slides and 19 or 61.3 % who could modify an organisational chart. Finally, 18 or 58.1 % could add notes to slides, 17 or 54.8% could use a master slide, add forms of shape and preset animation effects, start a slide on any show, while 16 or 51.6 % could hide slides and 15 or 48.4 % could use on-screen navigation.

5.2.7.2 Presentation software

Question 7 (v) was asked to establish what presentations software subject librarians in each university library were using. Of the subject librarians who responded 28 or 90 % use Microsoft Powerpoint, while three or 10 % use Corel Presentations.

5.2.7.3 Presentation training

Table 18 reflects the responses to question 7 (w), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses in presentations.

Table 18

Presentation training			
Training		Frequency	Percent
Valid	No	14	45.2
	University of Natal powerpoint introductory course	14	45.2
	University of Natal corel presentations course	1	3.2
	ICDL module	1	3.2
	No response	1	3.2
	Total	31	100.0

Of the subject librarians who responded to the questionnaire 14 or 45.2 % had not had any formal training in presentations and one or 3.2 % subject librarian did not respond to the question. Of the subject librarians who had received formal training, 14 or 45.2 % attended a University of Natal Powerpoint introductory course; one or 3.2 % attended a University of Natal Corel Presentations course and an ICDL module respectively.

5.2.7.4 Presentation problems

Question 7 (x) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to presentations. These problems are reflected in Table 19.

Table 19

Presentation problems		
Problem	Frequency	Percent
Valid No response	25	80.6
Need more training	3	9.7
Not familair with all functions	1	3.2
Poor selection clipart	1	3.2
Never use it	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 25 or 80.6 % did not respond to this question. Of the subject librarians who responded to the question, three or 9.7 % considered the need for more training a problem, while one or 3.2 % suggested that they never use presentations, are not familiar with all its functions, and that presentations has a poor selection of clipart respectively.

5.2.8 Section 8 – E-mail

The information in this section deals with e-mail operations and functions, software, training and problems experienced by subject librarians.

5.2.8.1 E-mail functions and operations

Questions 8 (a-i) were asked to establish the subject librarians knowledge and skill regarding e-mail. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the e-mail functions and operations listed in Table 20. The functions are arranged in descending order in relation to the *Yes* responses.

Table 20

Functions relating to e-mail N = 31

Function	No		Yes		Uncertain	
	Count	%	Count	%	Count	%
Compose send e-mail			31	100.0%		
Retrieve read e-mail			31	100.0%		
Reply, forward e-mail			31	100.0%		
Save, print, delete e-mail			31	100.0%		
Open an attached file			31	100.0%		
Attach a file	1	3.2%	30	96.8%	2	6.5%
Create manage files	2	6.5%	28	90.3%	1	3.2%
File e-mail messages	1	3.2%	28	90.3%	2	6.5%
Subscribe to list/listserv	5	16.1%	23	74.2%	3	9.7%

The subject librarians who responded to the questionnaire responded to all the questions in this section therefore Table 20 does not have a *No response* column. Of the subject librarians who responded to the questionnaire 31 or 100 % could compose, send, retrieve, read, reply, forward, save, print, delete e-mail and open an attached file. This was followed by 30 or 96.8 % who could attach a file, while 28 or 90.3 % could create and manage files and file e-mail messages. Finally, 23 or 74.2 %

could subscribe to a list/listserv. Thus this section on e-mail functions and operations recorded very high scores for the *Yes* responses.

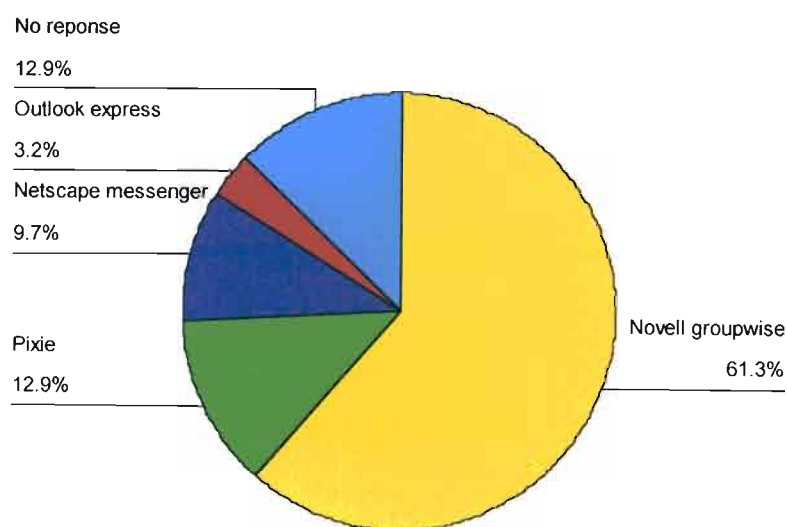
5.2.8.2 E-mail software

Question 8 (j) was asked to establish what e-mail software subject librarians in each of the university libraries were using. Figure 8 reflects the e-mail software used by the various universities.

Figure 8

N = 27

E-mail software



Of the subject librarians who responded a majority of 19 or 61.3 %, use Novell Groupwise, while four or 12.9 % use Pixie, three or 9.7 % use Netscape Messenger and one or 3.2 % use Microsoft Outlook Express. Of the subject librarians who responded to the questionnaire four or 12.9% did not respond to the question.

5.2.8.3 E-mail training

Table 21 reflects the responses to question 8 (k), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses for e-mail.

Table 21

E-mail training

Training		Frequency	Percent
Valid	No	21	67.7
	University of Natal groupwise introductory course	7	22.6
	No response	3	9.7
	Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 21 or 67.7 % had not had any formal training for e-mail and three or 9.7 % did not respond to the question. Of the subject librarians who received formal training, seven or 22.6 % attended a University of Natal Groupwise introductory course.

5.2.8.4 E-mail problems

Question 8 (1) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to presentations. These problems are reflected in Table 22.

Table 22

E-mail problems

Problem		Frequency	Percent
Valid	No response	24	77.4
	Slow delivery	2	6.5
	Opening attachments	2	6.5
	Viruses	2	6.5
	Using Groupwise e-mail calendar	1	3.2
	Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 24 or 77.4 % did not respond to this question. Of the subject librarians who responded to the questionnaire two or 6.5 % experienced difficulties with viruses, slow delivery and opening attachments respectively. Only one or 3.2 % subject librarian had a problem with using the Groupwise e-mail calendar.

5.2.9 Section 9 – Internet

The information in this section deals with Internet functions and operations, software or browsers, training and problems experienced by subject librarians.

5.2.9.1 Internet operations and functions

Questions 9 (a-j) were asked to establish the subject librarians knowledge and skill regarding the Internet. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the Internet functions and operations listed in Table 23. The functions are arranged in descending order in relation to the *Yes* responses.

Table 23

Functions relating to the Internet N = 31

Function	No		Yes		Uncertain		No response	
	Count	%	Count	%	Count	%	Count	%
Identify, find institutions home page			31	100.0%				
Explore web through home pages			31	100.0%				
Use search history			31	100.0%				
Use a search engine			31	100.0%				
Use navigation buttons			30	96.8%			1	3.2%
Locate a source from an URL			30	96.8%	1	3.2%		
Create bookmarks	1	3.2%	30	96.8%				
Use bookmarks to access sites	1	3.2%	30	96.8%				
Down load file from a site	2	6.5%	28	90.3%			1	3.2%
Identify hypertext link			27	87.1%	1	3.2%	3	9.7%

Of the subject librarians who responded to the questionnaire 31 or 100 % could identify, find their institutions home page, explore the Web through home pages, use the search history, and use a search engine, while 30 or 96.8% could use navigation buttons, locate a source from an URL (Uniform Resource Locator), create bookmarks, use bookmarks to access sites. Followed by 28 or 90.3 % who could and down load a file from a site and 27 or 87.1 % who could identify a hypertext link.

5.2.9.2 Internet software or browsers

Question 9 (k) was asked to establish what Internet software or browsers subject librarians in each university library were using. Of the subject librarians who responded 22 or 70.6 % use Internet Explorer and nine or 29.4 % use Netscape Navigator.

5.2.9.3 Internet training

Table 24 reflects the responses to question 9 (l), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses for the Internet.

Table 24

Internet training

Training	Frequency	Percent
Valid No	21	67.7
University of Natal Internet introductory course	5	16.1
No response	2	6.5
University of Durban-Westville European Union course	2	6.5
University of Zululand European Union course	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 21 or 67.7 % had not had any formal training for the Internet and two or 6.5 % did not respond to the question. Of the subject librarians who had received formal training, five or 16.1 % attended a University of Natal Internet introductory course, two or 6.5 % attended a University of Durban-Westville European Union course and one or 3.2 % attended a University of Zululand European Union course.

5.2.9.4 Internet problems

Question 9 (m) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to the Internet. These problems are reflected in Table 25.

Table 25

Internet problems		
Problem	Frequency	Percent
Valid No response	23	74.2
Slowness	3	9.7
Outdated Websites	2	6.5
Problems with access	2	6.5
Sites disappear	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 23 or 74.2% subject librarians did not respond to this question. Of the subject librarians who responded to the question, three or 9.7 % experienced difficulties with slowness (response times) of the Internet, two or 6.5 % with outdated websites and problems with access respectively. Only one or 3.2 % subject librarian had a problem with sites that disappear.

5.2.10 Section 10 – Networking

The information in this section deals with networking functions and operations, training and problems experienced by subject librarians.

5.2.10.1 Networking functions and operations

Questions 10 (a-e) were asked to establish the subject librarians knowledge and skill regarding networking. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the networking functions and operations listed in Table 26. The functions are arranged in descending order in relation to the *Yes* responses.

Table 26

Functions relating to networking N = 31

Function	No		Yes		Uncertain	
	Count	%	Count	%	Count	%
Retrieve a document from server	8	25.8%	16	51.6%	7	22.6%
Connect to file server	8	25.8%	15	48.4%	8	25.8%
Save a document on server	9	29.0%	15	48.4%	7	22.6%
Disconnect from server	8	25.8%	14	45.2%	9	29.0%
Share files on network	10	32.3%	13	41.9%	8	25.8%

The subject librarians who responded to the questionnaire responded to all the questions in this section therefore Table 26 does not have a *No response* column. Of the subject librarians who responded to the questionnaire 16 or 51.6 % could retrieve a document from the server, 15 or 48.4 % connect to the server and save a document on the server. Followed by 14 or 45.2 % who could disconnect from the server and 13 or 41.9 % share files on the network. Thus, there is a low score rate for the *Yes* response for the networking functions and operations section.

5.2.10.2 Networking training

Table 27 reflects the responses to question 10 (f), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training courses in networking.

Table 27

Networking training

Training		Frequency	Percent
Valid	No	27	87.1
	Networking introductory course	2	6.5
	University of Durban-Westville course	1	3.2
	No response	1	3.2
	Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 27 or 87.1 % had not had any formal training in networking and one or 3.2 % subject librarian did not respond to the question. Of the subject librarians who received formal training two or 6.5 % attended a Networking introductory course while one or 3.2 % attended a University of Durban-Westville course.

5.2.10.3 Networking problems

Question 10 (g) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to networking. These problems are reflected in Table 28.

Table 28

Networking problems

Problem		Frequency	Percent
Valid	No response	24	77.4
	Lack of knowledge and understanding	4	12.9
	Slowness of network	2	6.5
	Server downtime	1	3.2
	Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 24 or 77.4% did not respond to this question. Of the subject librarians who did respond to the question, four or 12.9 % considered the lack of knowledge a problem while two or 6.5 % considered slowness of their network a problem. Only one or 3.2 % had a problem with server downtime.

5.2.11 Section 11 – Setup, maintenance and troubleshooting

The information in this section deals with the setup, maintenance and troubleshooting of computers experienced by subject librarians.

5.2.11.1 Setup, maintenance and troubleshooting functions and operations

Questions 11 (a-k) were asked to establish the subject librarians knowledge and skill regarding the setup, maintenance and troubleshooting of computers. Subject librarians were asked if they could not (*No*), could (*Yes*) or were not sure how to (*Uncertain*) perform the setup, maintenance and troubleshooting functions and operations listed in Table 29. The functions are arranged in descending order in relation to the *Yes* responses.

Table 29

Functions relating to setup, maintenance and troubleshooting N = 31

Function	No		Yes		Uncertain		No response	
	Count	%	Count	%	Count	%	Count	%
Make backup copies	7	22.6%	22	71.0%	1	3.2%	1	3.2%
Protect and care for disks	7	22.6%	21	67.7%	2	9.7%	1	3.2%
Connect peripheral devices	11	35.5%	16	51.6%	3	6.5%	1	3.2%
Install an application	9	29.0%	15	48.4%	7	22.6%		
Identify technical assistance	10	32.3%	15	48.4%	6	19.4%		
Setup computer	14	45.2%	14	45.2%	2	6.5%	1	3.2%
Protect against viruses	9	29.0%	14	45.2%	8	25.8%		
Diagnose and correct problems	10	32.3%	13	41.9%	7	22.6%	1	3.2%
Upgrade an application	11	35.5%	13	41.9%	7	22.6%		
Clean computer, printer	15	48.4%	9	29.0%	7	22.6%		
Identify operating environments	16	51.6%	6	19.4%	9	29.0%		

Of the subject librarians who responded to the questionnaire 22 or 71 % could make backup copies, 21 or 67.7 % protect and care for disks, 16 or 51.6 % connect peripheral devices and 15 or 48.4 % install an application and identify technical assistance respectively. This is followed by 14 or 45.2 % who could setup a computer and protect against viruses. Finally, 13 or 41.9 % could diagnose and correct problems, upgrade an application, while nine or 29 % could clean a computer or printer and six or 19.4 % identify operating environments. Thus there is a low score rate for the *Yes* responses for the setup, maintenance and troubleshooting functions and operations section.

5.2.11.2 Setup, maintenance and troubleshooting training

Table 30 reflects the responses to question 11 (I), which was asked to determine whether the subject librarians who responded to the questionnaire had attended any formal training in the setup, maintenance and troubleshooting of computers.

Table 30

Setup, maintenance and troubleshooting training		
Training	Frequency	Percent
Valid No	26	83.9
Computer college course	2	6.5
A+ course	1	3.2
University of Zululand European Union course	1	3.2
No response	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 26 or 83.9 % had not had any formal training in the setup, maintenance and troubleshooting of computers and one or 3.2 % did not respond to the question. Of the subject librarians who had received formal training, two or 6.5 % attended a Computer college course while one or 3.2 % attended an A+ course and a University of Zululand European Union course respectively.

5.2.11.3 Setup, maintenance and troubleshooting problems

Question 11 (m) was asked to determine what problems the subject librarians who responded to the questionnaire had with regard to the setup, maintenance and troubleshooting of computers. These problems are reflected in Table 31.

Table 31

Setup, maintenance and troubleshooting problems

Problem	Frequency	Percent
Valid No response	25	80.6
Support from ITD staff not prompt	1	3.2
Don't understand computer jargon	1	3.2
Ignorance	1	3.2
Lack of training	1	3.2
Lack of knowledge and understanding	1	3.2
Can't keep pace with change	1	3.2
Total	31	100.0

Of the subject librarians who responded to the questionnaire a high percentage of 25 or 80.6 % did not respond to this question. Of the subject librarians who did respond one or 3.2 % experienced difficulties with keeping pace with change, support from their institutions Information Technology Division (ITD) staff not being prompt, understanding computer jargon, ignorance, lack of training, knowledge and understanding respectively.

5.3 Summary

Subject librarians who responded to the questionnaire performed well for the windows and keyboard, word processing, e-mail and Internet functions and operations questions of each section. Most of the subject librarians had not received any formal training and a few responded to the problem questions of each section.

Chapter 6

Interpretation of the results

In this chapter, the findings of the study are considered in the light of the research problem and the literature reviewed. The purpose of this study has been to investigate the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal. The objectives were: to investigate the ways in which the subject librarians are using ICT; to establish the level of ICT knowledge and skills amongst the subject librarians; to identify the problems the subject librarians face in the use of ICT and to identify the ICT education, training and staff development needs amongst the subject librarians. The order of the discussion in this chapter follows that of the order of the objectives of the study. The results for each of the 11 sections of the questionnaire are therefore discussed in light of the objectives of the study. The findings that are interpreted in this chapter relate only to the subject librarians who responded to the questionnaire. In view of the relatively high response rate of the survey, it is possible to make generalisations about the whole population.

6.1 The ways in which subject librarians are using ICT

This section explores the findings relating to the main tasks or duties performed by the subject librarians, subject librarian access to and use of a work and home computer and the use of software and hardware applications.

6.1.1 Main tasks or duties performed by subject librarians

In order to understand the ways in which subject librarians are using ICT one must examine the main tasks or duties performed by subject librarians. In the scope of their work the main tasks or duties performed by most of the subject librarians who

responded to the questionnaire included: 77.4% user education, 67.7% collection development, 58.1% cataloguing, 54.8% reference work, 48.4% classification and literature searching. This is partly in keeping with the literature that suggests that the role of the subject librarian centers around four main areas: academic liaison, collection development, information skills teaching (user education) and enquiry or reference work (Bluck 1996). However, in this study only 29 % of the subject librarians considered academic liaison as part of their main duties and tasks. There is thus a strong focus on user education as part of the main tasks and duties of these subject librarians. This is in keeping with the literature that suggests that subject librarians have become more of consultants in information services and many users want to conduct their own searches (Viljoen and Underwood 1997). If users want to be more independent in their search for information, user education in the use of information systems and databases is very important (Muddiman 1999). This implies that subject librarians have to have the necessary ICT knowledge and skills before they can impart them to others.

6.1.2 Access to, and use of, work computer

Of the 31 subject librarians who responded to the question 93.5 % used a computer in the course of their duties or tasks at work. This high percentage indicates, as was to be expected, that most of the subject librarians use a computer to perform their tasks and duties. Since computers have assumed a central role in the library profession over the past years, libraries need to know more about them. Also, 96.8% of the subject librarians, that is, all but one of them had access to their own computer at work. The subject librarian who did not have access to their own work computer, shared a computer with colleagues, and worked in a branch library. The main tasks and duties that were performed using a computer included: 73.3 % database searching, 71 % information retrieval, 54.8 % word processing, 51.6 % e-mail, 48.4 % Internet access and 29 % classification. Linked to work computer access and use is the subject librarians' access and use of a home computer.

6.1.3 Access to, and use of, home computer

While 71 % of the subject librarians had access to a home computer, only 29 % did not. These 71 % of the subject librarians used the home computer mainly for the following: 50 % word processing, 15.8 % Internet access, 13.2 % e-mail and 7.9 % games.

6.1.4 Software application use

Microsoft application software is used extensively in all the libraries with the exception of their e-mail applications used. This is in keeping with international trends.

Of the subject librarians who responded 71.8 % use Microsoft Word, while 28.2 % use Corel Wordperfect for word processing. In terms of spreadsheets 84 % of the subject librarians who responded use Microsoft Excel, while 16 % use Corel Quattro Pro. Of the subject librarians who responded 75 % use Microsoft Access, while 25 % use Q + A for databases. In terms of presentations 90 % of the subject librarians who responded use Microsoft Powerpoint, while 10 % use Corel Presentations. Of the subject librarians who responded 61.3 % use Novell Groupwise, 12.9 % Pixie, 9.7 % Netscape Messenger and 3.2 % use Microsoft Outlook Express for e-mail. Thus in terms of e-mail software, the University of Natal campuses use Novell Groupwise, while the University of Zululand uses Pixie, and the University of Durban-Westville use Netscape Messenger and Microsoft Outlook Express.

} Q/A
vs
M. Access

In terms of Internet browsers 70.6 % of the subject librarians who responded use Microsoft Internet Explorer, while 29.4 % use Netscape Navigator.

6.1.5 Hardware use

The findings revealed a high usage of Dell computers with 90.3 % of the subject librarians who responded to the questionnaire using Dell computers while 6.5 % of the subject librarians use Mecer computers. Only one subject librarian did not respond to the question and it can be implied that she or he did not know what make of computer was used. This high usage of Dell Computers is due to the Mellon Foundation funding to all the university libraries. The Mellon Foundation purchased Dell computers and distributed them to the university libraries according to the proposals that were sent in by the libraries. The University of Natal had also entered into an agreement with Dell to lease computers for both its Durban and Pietermaritzburg campuses.

In terms of the model of computers that were used by subject librarians, 64.5 % of the subject librarians did not know what model of computer they used at work. Knowledge of computer make is basic in terms of computer literacy and this indicates a lack of standard information about hardware use.

6.2 The level of ICT knowledge and skills amongst the subject librarians and their ICT education and staff training and development needs

In order to establish the level of ICT knowledge and skill amongst the subject librarians the issues relating to the ICDL and the performance of various functions and operations that relate to the ICDL modules and the literature are discussed. In order to identify the ICT education, training and staff development needs amongst the subject librarians in the study, the issues relating to education and training in each of the 11 sections of the questionnaire will be discussed in relation to the subject librarians performance of the various functions and operations that relate to the ICDL modules. Woodsworth (1997) argues that change is running rampant in libraries with technology as the driving force. This has resulted in librarians constantly questioning

their future and the competencies they will need to survive professionally. Due to constant changes it would be difficult for subject librarians to survive without any effort to ongoing professional development, continuing education and staying aware of trends in the field. As a result computer literacy had become an important competency for librarians in any position.

6.2.1 Professional qualifications and year of qualification

The majority of the subject librarians, 53.2 %, had a basic library qualification. Of the subject librarians 50 % had obtained their professional qualifications in or between 1990 and 1999. Only one of the subject librarians had obtained their professional library qualification in or after 2000. The remaining 47.7 % of the 31 subject librarians had obtained their library qualifications from 1969 to 1989. In terms of access to further education and training in the form of a Higher degree plus the access to ICT skilling such an opportunity represents, of the subject librarians 33.9 % had an honours degree, while only 12, 9 % had a master's degree. With computer literacy being an important competency for librarians in any position, Woodsworth (1997) suggests that technological competencies are the most critical ones for librarians, even if they obtained their professional qualifications as recent as the early 1990s. Ongoing training is necessary if subject librarians are to keep up with changing technology. It is widely recognized in the literature that there is a need for librarians that are well trained in information technology.

6.2.2 ICDL proficiency

The ICDL is proof of the ability to use a computer and its most popular applications. The central objective of the ICDL is to promote and encourage computer literacy. Only three or 9.7 % of the subject librarians who responded to the questionnaire had obtained the ICDL. All three subject librarians performed well on the sections of the questionnaire that related to the ICDL. Given the fact that almost all subject librarians use a computer to perform their main tasks and duties one would assume that it would be imperative for all subject librarians to have an ICDL. Coupled with this is the fact that three of the university libraries campuses provide training for the ICDL, that is,

the University of Natal, Durban, University of Natal, Pietermaritzburg and the University of Zululand. In addition the University of Natal gives recognition and credit for the ICDL. Of the subject librarians who responded, however, 71 % did not know whether their institution gave recognition for the ICDL. In terms of training, just over half of the respondents, 51.6 % were aware of their institution providing training for the ICDL. It would therefore, appear that there is a general lack of knowledge regarding the ICDL amongst subject librarians in these university libraries. From the literature it appears that there is a general lack of ICT knowledge and skill amongst academic librarians (Moahi 1996; Kaniki 1996, 1999; Nawe 1998, 2000; Ibegbulum 2000).

The level of competency for the ICDL is high. To obtain an ICDL candidates must demonstrate practical proficiency in each of the most commonly used software tools. The candidates have to pass all seven modules at a very high level, as high as 80 %. Thus the respondents performance on each of the sections of the questionnaire that relate to the ICDL modules and the literature are discussed.

Krissof and Konrad (1998) argue that computer literacy hinges on developing a basic level of competency in three areas of computing: operating system, hardware basics and troubleshooting and software basics and troubleshooting. In short every librarian should understand: web browsers, e-mail, windows, networking essentials and basic computer diagnostics (Latham 2000).

6.2.3 File management functions and operations

The average score for the *Yes* responses for file management functions and operations was 78.3 %. Thus the subject librarians would not have passed this module if they were attempting the ICDL. Responses that were below the 80 % average were:

- 74.2 % name files
- 74. 2 % locate files
- 71 % create directory
- 54.8 % search for files

Although the above functions and operations are not part of the subject librarians' traditional tasks it must be noted that these are basic functions and operations that any computer user must be able to perform.

6.2.3.1 Training for file management

Of the subject librarians 64.5 % had not received any formal training for file management, while 19.4 % of the subject librarians had been on a University of Natal introduction to windows course, 6.5 % on a University of Durban-Westville European Union course, 3.2 % on an A+ course, 3.2 % on a DOS file management course and 3.2 % on a PC engineering course. Therefore, subject librarians require further training for file management.

6.2.4 Windows and keyboard functions and operations

The average score for the *Yes* responses for the windows and keyboard functions and operations was 96.6 %. Thus subject librarians did very well on this section and they would have passed this section if they were attempting the ICDL.

6.2.4.1 Training for windows and keyboard

Of the subject librarians 35.5 % had not received any formal training for windows and keyboard functions and operations. Added to this, 9.7 % of the subject librarians did not respond to the question. Of the subject librarians who received formal training, 29 % attended a University of Natal introduction to windows course, 6.5 % a University of Zululand European Union course, 3.2 % an End-user course, an A+ course, a Windows 95 course and a University of Durban-Westville European Union course. Only one subject librarian responded that they had attended the ICDL module for file management, even though there were two other subject librarians that had an ICDL.

6.2.5 Word processing functions and operations

Morgan (1998) argues that there are three areas that librarians should be familiar with, word processors, spreadsheets and databases and local and networked services.

The average score for the *Yes* responses on the word processing functions and operations was 93.7 %. Thus subject librarians would have passed this section if they were attempting the ICDL. Responses below the 80 % average were:

- 77.4 % create header or footer
- 74.2 % set tabs
- 64.5 % open document without a .doc

6.2.5.1 Training for word processing

Of the subject librarians 41.9 % had not received any formal training for word processing and 3.2 % of the subject librarians did not respond to the question. Of the subject librarians who received formal training, 29 % attended a University of Natal Word introductory course, 12.9 % a University of Natal WordPerfect course, 9.7 % a University of Zululand Word workshop and one subject librarian responded that they had attended the ICDL model for word processing.

Thus although very few subject librarians received training for word processing they still performed well. It could be argued that many have been self-taught.

6.2.6 Spreadsheet functions and operations

The average score for the *Yes* responses for spreadsheet functions and operations was 37.8 %. Therefore the subject librarians would not have passed this module if they were attempting the ICDL. The average for the *Yes* response for each of the 17 questions in this section was below 80 %. See Table 13.

6.2.6.1 Training for spreadsheets

Of the subject librarians 67.7 % had not received any formal training for spreadsheets. Added to this, 6.5 % of the subject librarians did not respond to this question. Of the subject librarians who received formal training for spreadsheets, 16.1 % attended a University of Natal Excel introductory course and 3.5 % a Windows 95 course. 6.5 % of the subject librarians responded that they had completed the ICDL module for spreadsheets.

Therefore, the subject librarians did not perform very well for spreadsheets and this could be attributed to the high percentage of subject librarians who had not received any training.

6.2.7 Database functions and operations

The bread and butter of libraries are lists, lists of books, citations, facts and Internet resources (Morgan 1998). Most of these lists have structure, and structured lists are databases. Ironically, few librarians have very much expertise in the use of databases. The average score for the *Yes* responses for database functions and operations was 5.8 %. Therefore the subject librarians would not have passed this module if they were attempting the ICDL. Furthermore, of all the sections, this section on databases recorded the poorest average score for the *Yes* responses. This result therefore is in keeping with the literature (Morgan 1998).

6.2.7.1 Training for databases

Of the subject librarians 80.6 % did not receive any formal training for databases. Added to this, 16.1 % of the subject librarians did not respond to the question. Only one subject librarian responded that they had completed the ICDL module for databases.

The section on databases recorded the worst performance overall. The result is a strong indication that the subject librarians generally do not make use of database software to a large extent.

6.2.8 Presentation functions and operations

The average score for the *Yes* responses for database functions and operations was 62.2%. Therefore the subject librarians would not have passed this module if they were attempting the ICDL. The average for the *Yes* response for each of the 21 questions in this section was below 80 %. See Table 17.

6.2.8.1 Training for presentations

Of the subject librarians 45.2 % did not receive any formal training for presentations. Added to this, 3.2 % of the subject librarians did not respond to the question. Of the subject librarians who did receive formal training, 45.2 % attended a University of Natal Powerpoint introductory course, 3.2 % a University of Natal Corel Presentations course. One of the subject librarians responded that they had completed the ICDL module for presentations.

Therefore, subject librarians did not perform well in terms of presentations, even though more than half of them had received training.

6.2.9 E-mail functions and operations

The average score for the *Yes* responses for the e-mail functions and operations was 94.6%. Therefore, the subject librarians would have passed this section if they were attempting the ICDL. The only response below the 80 % average was:

- 74.2 % subscribe to list/listserv

6.2.9.1 Training for e-mail

Of the subject librarians 67.7 % did not receive any formal training for e-mail. Added to this, 9.7 % of the subject librarians did not respond to the question. Of the subject librarians who did receive formal training, 22.6 % attended a University of Natal Groupwise introductory course.

The ability for subject librarians to subscribe to list/listserv is vital in academic libraries for them to perform their reference and current awareness tasks effectively. Therefore, subject librarians would require more training to update their skills in this area even though they performed well overall for e-mail.

6.2.10 Internet functions and operations

The average score for the *Yes* responses for the Internet functions and operations was 96.5 %. Thus subject librarians did very well on this section and they would have passed this section if they were attempting the ICDL.

6.2.10.1 Training for the Internet

Of the subject librarians 67.7 % did not receive any formal training for the Internet. Added to this, 6.5 % of the subject librarians did not respond to the question. Of those who did receive formal training, 16.1 % attended a University of Natal Internet introductory course, 6.5 % a University of Durban-Westville European Union course and 3.2 % a University of Zululand European union course.

Since the subject librarians performed well with more than half not receiving training, it could be argued that many are self-taught. Internet use is important for subject librarians in an academic library.

6.2.11 Networking

The average score for the *Yes* responses for networking functions and operations was 47.1 %. Therefore the subject librarians would not have passed this section if they were attempting the ICDL. The average for the *Yes* response for each of the five questions in this section was below 80 %. See Table 26.

6.2.11.1 Training for networking

Of the subject librarians 87.1 % had not received any formal training for networking. Added to this, 3.2 % of the subject librarians did not respond. Of those who did receive formal training, 6.5 % attended a Networking introductory course and 3.2 % a University of Durban-Westville course.

Since the subject librarians performed poorly for networking it could be argued that this could be attributed to the fact that very few subject librarians received training for networking.

6.2.12 Setup, maintenance and troubleshooting

The average score for the *Yes* responses for the setup, maintenance and troubleshooting functions and operations was 42.3 %. Therefore the subject librarians would not have passed this section if they were attempting the ICDL. The average for the *Yes* response for each of the 11 questions in this section was below 80 %. See Table 29.

6.2.12.1 Training for setup, maintenance and troubleshooting

Of the subject librarians 83.9 % had not received any formal training for setup, maintenance and troubleshooting. Added to this, 3.2 % of the subject librarians did not respond to the question. Of those who did receive formal training, 6.5 % attended a Computer college course, 3.2 % an A+ course and 3.2 % a University of Zululand European Union course.

Again, like networking above, the subject librarians performed very poorly for setup, maintenance and troubleshooting and this could be attributed to the fact that very few subject librarians received training.

6.3 The problems that subject librarians face in the use of ICT

In order to identify the problems that subject librarians in the study face in the use of ICT, the issues relating to problems that subject librarians had with regard to software and hardware applications in sections 2 - 11 of the questionnaire will be discussed. It is evident from the discussion below that most of the problems subject librarians faces in the use of ICT are due to a lack of knowledge, understanding and training. It must be noted that many of the problems faced by subject librarians are not key to the traditional tasks subject librarians perform. However, these problems do highlight a lack of training, understanding and ultimately knowledge and skill in the use of the applications.

6.3.1 File management problems

More than a third of the subject librarians who responded to the questionnaire, 74.2 % did not respond to the problem question. The problems experienced by those who responded were:

- 6.5 % ordering of files
- 6.5 % understanding file management concepts
- 3.2 % understanding the difference between drives and directories
- 3.2 % understanding the purpose of file management
- 3.2 % understanding terminology
- 3.2 % locating files using DOS

6.3.2 Windows and keyboard problems

Like the previous section, more than a third of the subject librarians who responded to the questionnaire, 77.4 % did not respond to the problem question. The problems experienced by those who responded were:

- 9.7 % system constantly changes
- 6.5 % qwerty keyboard design
- 3.2 % operating without a mouse
- 3.2 % aligning text

6.3.3 Word processing problems

Once again, of the subject librarians who responded to the questionnaire 77.4 % did not respond to the problem question of this section. Those who did respond experienced the following problems:

- 9.7 % migrating from Corel Word perfect to Microsoft Word
- 6.5 % indenting in Microsoft Word
- 3.2 % setting tabs
- 3.2 % inserting date and time

6.3.4 Spreadsheet problems

Of the subject librarians who responded to the questionnaire 67.7 % did not respond to this sections problem question. The problems experienced by those who did respond were:

- 16.1 % no training
- 9.7 % forget functions because not used often
- 3.2 % transferring data
- 3.2 % formulas

6.3.5 Database problems

All of the 31 subject librarians did not respond to this question. Again this is a strong indication that subject librarians do not make use of database applications.

6.3.6 Presentation problems

In terms of presentation problems 80.6 % of the subject librarians who responded to the questionnaire did not respond to this question. The problems experienced by the few who responded were:

- 9.7 % need more training
- 3.2 % never use it
- 3.2 % not familiar with all functions
- 3.2 % poor selection of clipart

6.3.7 E-mail problems

A high percentage of 77.4 % of the subject librarians who responded to the questionnaire did not respond to the question relating to e-mail problems. The few subject librarians who responded to the question experienced the following problems:

- 6.5 % viruses
- 6.5 % slow delivery
- 6.5 % opening attachments
- 3.2 % using Groupwise e-mail calendar

6.3.8 Internet problems

Again a high percentage of the subject librarians who responded to the questionnaire 74.2 %, did not respond to the question on Internet problems. Those that did experienced the following problems:

- 9.7 % slowness
- 6.5 % outdated Websites
- 6.5 % problems with access
- 3.2 % sites disappear

6.3.9 Networking problems

A high percentage of subject librarians who responded to the questionnaire 77.4 %, did not respond to the networking problems question. Those that responded experienced the following problems:

- 12.9 % lack of knowledge and understanding
- 6.5 % slowness of the network
- 3.2 % server downtime

6.3.10 Setup, maintenance and troubleshooting problems

Like many of the other sections above, of the subject librarians who responded to the questionnaire 80.6 % did not respond to the problem question relating to this section. The problems experienced by those who responded were:

- 3.2 % can't keep pace with change
- 3.2 % support from ITD staff not prompt
- 3.2 % don't understand computer jargon
- 3.2 % ignorance
- 3.2 % lack of training
- 3.2 % lack of knowledge and understanding

6.4 Summary

This chapter examined the ways in which subject librarians used ICT in relation to the main tasks and duties they perform and the hardware and software applications they use. The subject librarians knowledge and skills for windows and keyboard, word processing, e-mail, and Internet were high. There was a general lack of formal training amongst the subject librarians and the majority of them did not respond to the problem question of each section.

Chapter 7

Conclusions and recommendations

The purpose of this study was to investigate the ICT knowledge and skills of the subject librarians at the university libraries of KwaZulu-Natal. In this chapter, conclusions and recommendations are made after briefly revisiting the objectives of the study.

7.1 Revisiting the objectives of the study

Objectives of the research were to investigate the ways in which the subject librarians were using ICT; to establish the level of ICT knowledge and skills amongst the subject librarians; to identify the ICT education and staff training and development needs amongst the subject librarians and to identify the problems the subject librarians face in the use of ICT. The purpose behind the objectives was to facilitate the making of recommendations that would improve the current level of ICT knowledge and skills amongst the subject librarians at the university libraries of KwaZulu-Natal.

7.2 Conclusions

The survey of 43 subject librarians in the libraries of University of Durban-Westville, University of Natal, Durban and Pietermaritzburg and University of Zululand, resulted in several significant findings. The study was able to establish the level of ICT knowledge and skills among the subject librarians and to make recommendations regarding the addressing of the problems that were revealed. As was to be expected the majority of the subject librarians used a computer in the course of their duties or tasks at work. Almost all the subject librarians except one had access to their own work computer. The majority of the subject librarians use Dell (Dell is the largest computer manufacturer in the world) computers due to funding from the Mellon

Foundation or EU funding. Also, institutions like the University of Natal have an ongoing agreement to lease Dell computers. In terms of software applications, with the exception of e-mail applications, Microsoft software is used extensively in all the libraries. However, with the pending merger between the University of Natal and Durban-Westville, standardisation may result eventually in the use of one type of e-mail software across all the campus of the new merged institution. Therefore, both the hardware and software infrastructure is in place in all the universities examined by the study. However, the study reveals that there is an underutilisation of these ICT resources by subject librarians due to a lack of knowledge and skills. This finding is based on the subject librarians' levels of ICT knowledge and skill reflected in the survey.

An international standard, the ICDL was used to determine the subject librarians' level of ICT knowledge and skill. The ICDL is proof of the ability to use a computer and its most popular applications. A significant finding was that only three of the subject librarians out of the 31 who responded to the questionnaire had an ICDL. These three subject librarians performed well on all the sections of the questionnaire. The level of competency for the ICDL is high but commensurate with the knowledge and skills to be expected in terms of the subject librarians requisite levels of professional expertise as reflected in the literature. ICDL candidates have to pass all seven modules at a very high level of 80 %. The subject librarian's performance on each section of the questionnaire that related to the ICDL revealed that generally there was a lack of ICT knowledge and skill when compared with high level of competency that is required for the ICDL.

Subject librarians performed well in the terms of the functions and operations for the following applications: file management, windows and keyboard, word processing, e-mail and Internet. However, subject librarians did not perform well in terms of the functions and operations for the following applications: spreadsheets, databases, presentations, networking and setup, maintenance and troubleshooting. From the literature it is clear that subject librarians have to be familiar with all the above applications functions and operations in order for them to perform their roles effectively and efficiently in a demanding electronic environment that is constantly changing (Latham 2000; Marmion 1998). Given the fact that the majority of the

subject librarians use a computer in the course of their duties or tasks, there is an underutilisation of these resources due to a lack of knowledge and skills. Therefore, the potential benefits and advantages of using such resources are not being realized. The study sought further to probe the reasons for this underutilisation.

In terms of the literature Senn (1997) argued that IT comprises three interlocking components, computers (hardware), communication (programs and information) and *know-how* (people) or knowledge and skills. These three components are inseparable. Computers and communication are of little use without *know-how*. Therefore, the findings of this study show that subject librarians generally do not have the *know-how* to explore and take advantage of the opportunities technology creates, nor do they have the skill or ability to perform the applications functions and operations described above effectively.

Linked to the subject librarian's level of performance is the formal training they received for each of the areas mentioned above. In terms of professional qualifications just over half of the subject librarians had a basic library qualification. Half the subject librarians had obtained their library qualifications from 1990 to 1999. The other half obtained their library qualification from 1969 to 1989. With academic libraries undergoing major changes in the last 10 years due to technological developments, the literature clearly argues that technological competencies are the most critical ones for librarians, even if they obtained their professional qualifications as recent as the early 1990s (Woodsworth 1997). Therefore, half the subject librarians would have received their library education at a time when technological competencies were not as critical as they are now, thus suggesting that they might not have the appropriate knowledge and skills. However, it could be argued that a further degree in the form of an Honours or Masters degree could have remedied this. However, as mentioned already only half the subject librarians hold an Honours or Masters degree in library and information studies. Also, this presupposes that the Honours or Masters degree curriculum made provision for ICT knowledge and skills education. Thus, further skilling in the form of ongoing training and, or continuing education would be imperative for subject librarians to keep pace with the many changes due to technology.

Another significant finding of the study was a general lack of formal training. It can be argued that this lack of training has directly influenced the subject librarians' level of ICT knowledge and skill. There were, however, exceptions to this observation. Even though there was a lack of formal training for file management, windows and keyboard, word processing, e-mail and the Internet, the subject librarians' level of knowledge and skill were high for these applications. Also, in examining the formal courses that were attended by subject librarians, most of these courses were introductory courses; none of the subject librarians had attended intermediate or advanced courses. Perhaps the most significant finding relating to training is that two of the institutions, the University of Natal and the University of Zululand provide training for the ICDL yet only three subject librarians had obtained an ICDL. Also, with the pending merger between the University of Natal and Durban-Westville it could be argued that eventually training for the ICDL will be available to the University of Durban-Westville once the institutions have merged. Furthermore, just over half of the subject librarians were unaware that their institutions provided training for the ICDL. Generally, it could be argued that there is a lack of knowledge regarding the availability and benefit of the ICDL amongst the subject librarians.

In identifying the problems that subject librarians face in the use of ICT it is evident from the findings that the majority of these problems were as a result of a lack of understanding, knowledge, skill, and above all, as discussed above, a lack of training. Therefore, in an attempt to remedy the above situation the following recommendations with regard to education and staff training and development have been made.

7.3 Recommendations

It is hoped that the recommendations relating to education and staff training and development will assist in improving the ICT knowledge and skill of subject librarians in the university libraries of KwaZulu-Natal.

7.3.1 Education

In this section the importance of a LIS curriculum that caters for an education in both traditional library and ICT knowledge and skills is discussed.

7.3.1.1 Directions and practical steps to be taken with regard to LIS education

- Library schools should provide a curriculum that is balanced in the sense that it provides for an education in traditional librarianship as well as ICT knowledge and skills. With regard to the ICT knowledge and skills education, such an education must be user centred, and ICT must be viewed as a means not an end to promote a quality, efficient and effective service to library users. Also, such a curriculum must provide for continuing education so that librarians can update their ICT knowledge and skills to keep pace with ever changing technological developments. Where feasible library schools can link with existing higher qualification options like the ICDL, and recommend them to candidates for continuing education.

7.3.2 Staff training and development

According to Oldroyd (1996) failure to provide library staff with adequate training and to deploy them effectively represents one of the single most important constraints on change and development in library and information provision, and can seriously undermine its effectiveness, especially when this depends on the implementation of new practices, or on ICT.

7.3.2.1 Directions and practical steps to be taken with regard to staff training and development

In light of the above the, the following recommendations are made with regard to staff training and development for the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal:

- Library managers and supervisors in all the libraries under study need to realize the value of staff development and training for their library. Management should ensure all their staff understand and are able to cope with changes that have resulted from technological developments. According to Lipow (1989: 87) staff are the most important resource in a library: they constitute the largest budget, they deliver the library's services, they operate the library's equipment, they shape the library's image. The magnitude of change due to technological developments suggests that libraries have to devote greater resources to staff development. Library managers will have to make a commitment to staff development to ensure that staff have the necessary ICT knowledge and skills to work effectively in an environment that is demanding and rapidly changing.
- Library managers, supervisors and staff should be aware of the implications of the staff training and development legislation in South Africa, particularly the Skills Development Act, 1998 and relating legislation. Taking this legislation into account there should be no excuses, such as lack of funds to prevent the skills training of staff.
- A needs analysis should be done to determine individual and organisational strengths and weaknesses in terms of ICT knowledge and skills in each of these libraries. This study has already succeeded in contributing to an initial skills audit of the ICT knowledge and skills of subject librarians.
- Universities should employ or appoint a Skills Development Facilitator who would be responsible for developing and planning a library ICT skills

development strategy. The Facilitator should assist the libraries to draft and implement an ICT skills plan for their subject librarians.

- With the impending merger between the University of Durban-Westville and the University of Natal, this ICT needs assessment will be valuable in terms of contributing towards an understanding of the level of ICT knowledge and skill in each of these libraries, while the ICT development strategy and skills plan will ensure that all staff will eventually be on equal footing in terms of ICT knowledge and skills. This is important because users will be expecting the same level of quality service throughout all the libraries of the new merged institution.
- Training processes and procedures should be constantly monitored and modified to meet changing needs. This will ensure that subject librarians will be able to keep pace with the technological changes and will ensure that their skills are constantly updated.
- Finally, the objectives of ICT training for subject librarians should be to:
 - Place ICT in context, that is, management have to convince staff of the need to change to ICT processes;
 - Encourage staff confidence in ICT;
 - Make staff proficient in ICT skills;
 - Give staff opportunities for further development from the ICT skills acquired;
 - Give staff measurable transferable skills; and
 - Encourage CPD (Biddiscombe 1997: 7-11).

7.3.3. Future research

The current study had succeeded in providing an initial skills audit for the subject librarians in the libraries of all universities. Two further studies should be conducted. The first study should survey the library and information studies schools or departments in South Africa; in order to establish if the curricula they offer adequately cater for the ICT education of library and information workers in South Africa. Such a study should be similar to the one conducted by Stilwell (2002). The second should examine the ICT staff training and development needs (a needs assessment), particularly in the university libraries of the University of Durban-Westville and the University of Natal, Durban and Pietermaritzburg. The main objective of the proposed study should be the proposal of an ICT staff training strategy and development plan for subject librarians in these libraries. Finally, the study demonstrates that in spite of the recognition of the importance of ICT knowledge and skills for library professionals, for the subject librarians of KwaZulu-Natal much concerted effort needs to be made to improve competencies.

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Appendices

- Appendix 1 Questionnaire about the ICT knowledge and skills of subject librarians
 at the university libraries of KwaZulu-Natal
- Appendix 2 Cover letter of 2 July 2002 re: The ICT knowledge and skills of subject
 librarians at the university libraries of KwaZulu-Natal

Appendix 1

Questionnaire about the ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal

The ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal

This questionnaire as explained in the cover letter is intended to collect data about the ICT knowledge and skills of subject librarians in the university libraries of KwaZulu-Natal.

- A. Please complete this questionnaire as honestly as possible.**
- B. Please answer all the sections to the questionnaire.**
- C. To ensure anonymity, you are not required to write your name on the questionnaire. However, in order to make inferences and conclusions about individual institutions, two questions require you to indicate your library.**
- D. Return the questionnaire by using the enclosed self-addressed envelope. For UDW, UND, UNMED, EDGEWOOD and UNP, PLEASE USE THE INTERNAL MAIL SERVICE.**
- E. PLEASE RETURN THE QUESTIONNAIRE BY THE:**

02 AUGUST 2002 OR EARLIER
- F. Please cross the boxes(s) representing your choice(s) or answer(s) to each item/question and/or write your answers in the space provided. Should you need more space to write your answer(s) use the back of the questionnaire, but please make sure that you indicate the number(s) of the relevant questions/items.**

Ruth Hoskins
University Library
Private Bag X01
Scottsville
3209

hoskinsr@nu.ac.za

Phone: 033 – 260 5060

Fax: 033 – 260 5260

SECTION 1
GENERAL INFORMATION

a) Please indicate at which university library you work.

- ☐ University of Durban-Westville
- ☐ University of Natal, Durban
- ☐ University of Natal, Pietermaritzburg
- ☐ University of Zululand

b) Is the library at which you work a branch or satellite library?

- ☐ No
- ☐ Yes. Please give the name of the branch or satellite library.

c) Gender

- ☐ Female
- ☐ Male

d) Age

- ☐ 20 - 29 years
- ☐ 30 - 39 years
- ☐ 40 - 49 years
- ☐ 50+ years

e) Please list your professional library qualification(s) and the year(s) in which you obtained it or them.

f) Please list the main duties or tasks of your work.

g) Do you have access to a computer at home?

☐

No

☐

Yes. Please briefly state what you use it for.

h) Do you use a computer in the course of your duties or tasks as described in (f) above?

☐

No

☐

Yes. Please briefly list what you use the computer for.

i) Do you have your own “personal” computer at work?

☐

No

☐

Yes

j) What is the make of the computer you use at work (Dell, HP etc.)?

k) What is the model of the computer you use at work?

l) Do you have an International Computer Driving Licence (ICDL)?

☐

No

☐

Yes

m) Does your university give recognition and credit for the ICDL?

☐

No

☐

Yes

☐

Don't know

n) Does your university provide training for the ICDL?

☐

No

☐

Yes

☐

Don't know

SECTION 2

FILE MANAGEMENT

Can you:

	Yes	No	Uncertain
a) Identify drives and directories on a local PC on the network?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Name files correctly and use extension conventions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Locate files using DOS and Windows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Search for files with particular extensions (using wildcards)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Move around directories and drives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Save a file in a particular directory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Create a personal directory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Copy a file onto a floppy disk for transferal or backup?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Copy a file from a floppy disk back to a PC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Use the virus checker?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Have you had any formal training in file management in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?			
<input type="checkbox"/> No			
<input type="checkbox"/> Yes. Please briefly describe the forms of training.	<div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px;"></div>		
l) Please list any problems you may have with file management.			
<div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 15px;"></div>			

SECTION 3

WINDOWS / KEYBOARD

Can you:

	Yes	No	Uncertain
a) Identify what all the keys on a computer keyboard are for?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Point and click using a mouse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No	Uncertain
c) Double-click and drag and drop using the mouse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Identify icons in windows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Select, open, and move an icon?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Maximise and minimise windows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Activate and deactivate a window?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Use the scroll bars, menus and toolbars?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Use the control panel in windows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Open an application and create a document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Retrieve a document from a floppy disk?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Retrieve a document from a hard disk?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Name a document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Save a document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Re-name a document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Edit and re-save a document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Copy documents to and from drives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Create and name folders?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Save, open, and place documents inside folders?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) Work with more than one application at a time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
u) Exit from an application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

v) Have you had any formal training in the use of windows / keyboard in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?

☐ No

☐ Yes. Please briefly describe the forms of training.

w) Please list any problems you may have with using windows or the keyboard.

SECTION 4
WORD PROCESSING

Can you:

	Yes	No	Uncertain
a) Open a file?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a new file?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Type a basic formatted document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Copy and move blocks of text?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Change the font size?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Change the font style?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Set margins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Change line spacing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Set tabs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Save a file?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Use the Save As function?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Close a file?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Open a document not created in Word processing without a .doc extension?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Use the spell checker?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Use the thesaurus?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Use the dictionary?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Create a header or footer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) Insert date, time, and page number?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Add columns to the document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) Add clip art to the document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
u) What word processing software do you use?			
v) Have you had any formal training in word processing in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?			
<input type="checkbox"/> No			
<input type="checkbox"/> Yes. Please briefly describe the forms of training.			

w) Please list any problems that you may have with word processing.

SECTION 5

SPREADSHEETS

Can you:

	Yes	No	Uncertain
a) Interpret and communicate information in an existing spreadsheet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Enter data in an existing spreadsheet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Create a spreadsheet with rows, columns and headings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Format a cell or range of cells for currency, date, time, percentage, fixed decimal?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Protect a cell or range of cells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Create a spreadsheet with labels and values?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Create a formula using a formula indicator symbol, cell references, and operations symbols (+-*/)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Understand the order of operations as it relates to writing a spreadsheet formula?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Create a formula using functions (SUM and AVERAGE) and a range of cells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Copy values using fill down and fill across?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Copy formulae using fill down and fill across?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Change the appearance of a spreadsheet by inserting columns and rows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Change the appearance of a spreadsheet using gridlines, headers, and footers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Change the appearance of a spreadsheet using text features for label cells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Change the appearance of a spreadsheet using hiding and freezing/splitting?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Create a graph from spreadsheet data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Insert a spreadsheet into a word processing document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) What spreadsheet software do you use?			

s) Have you had any formal training in spreadsheets in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?

☐ No

☐ Yes. Please briefly describe the forms of training.

t) Please list any problems you may have with spreadsheets.

SECTION 6

DATABASES

Can you:

	Yes	No	Uncertain
a) Use a prepared database to enter data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Add a record to an existing database?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Delete a record from an existing database?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Use a database to sort records?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Use a database to search using “and”, “or” or “not” connectors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Create a database with multiple fields?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Create a database layout/report?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Create a database layout to match an existing form?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Create a database report with calculated summaries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Insert database fields into word processing documents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

k) What database software do you use?

- l) Have you had any formal training in databases in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?

☐ No

☐ Yes. Please briefly describe the forms of training.

- m) Please list any problems you may have with databases.

SECTION 7

PRESENTATIONS

Can you:

	Yes	No	Uncertain
a) Choose an automatic slide layout format for individual slides e.g. title slide, organisational chart etc?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Use a master slide?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Add text and images?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Use the copy and paste tools to duplicate text and images within the presentation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Use the copy and paste tools to duplicate a slide within the presentation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Use the cut and paste tools to move a slide within the presentation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Re-order slides within the presentation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Add various forms of shape; boxes, circles etc. to a slide?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Rotate or flip a drawn object in a slide?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Change the attributes of the shape and colour in the shape?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Apply shadow to a shape?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Create an organisational chart?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Modify the structure of an organisational chart?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Create different kinds of charts; bar, pie charts etc?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Add notes for the presenter to the slides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Number the slides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) Preview the presentation document in slide, outline, slide sorter, or notes view?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No	Uncertain
r) Add preset animation effects to slides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) Start a slide show on any slide?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) Use on-screen navigation tools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
u) Hide slides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v) What presentations software do you use?			
<hr/>			
<hr/>			
w) Have you had any formal training in presentations in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?			
<input type="checkbox"/> No			
<input type="checkbox"/> Yes. Please briefly describe the forms of training.			
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x) Please list any problems you may have with presentations.			
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SECTION 8

E-MAIL

Can you:

	Yes	No	Uncertain
a) Compose and send E-mail?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Retrieve and read E-mail?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Reply to sender and forward E-mail?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Save, print and delete E-mail?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create and manage E-mail folders?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) File E-mail messages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Subscribe to an E-mail mailing list/listserv?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Attach a file to an E-mail message?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Open/retrieve an attached file?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

j) What E-mail software or system do you use?

k) Have you had any formal training in the use of E-mail in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?

☐ No

☐ Yes. Please briefly describe the forms of training.

l) Please list any problems you may have with E-mail.

SECTION 9

INTERNET

Can you:

	Yes	No	Uncertain
a) Identify a hypertext link?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Identify and find your institution's home page?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Explore the web through home pages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Use navigation buttons?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Use the search history?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Locate a source from a known URL?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Create bookmarks for sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Use bookmarks to access web sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Down load files from web sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Use a search engine to find information?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

k) What Internet browser(s) do you use?

l) Have you had any formal training in the use of the Internet in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?

☐ No

☐ Yes. Please briefly describe the forms of training.

m) Please list any problems you may have with the Internet.

SECTION 10

NETWORKING

Can you:

	Yes	No	Uncertain
a) Connect or log onto a file server?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Retrieve a program or document from a file server?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Save a document to a specified location on the file server?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Disconnect/log off from the file server?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Share files with others on a network?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Have you had any formal training in networking in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?			

☐ No

☐ Yes. Please briefly describe the forms of training.

g) Please list any problems you may have with networking.

SECTION 11

SETUP, MAINTENANCE AND TROUBLESHOOTING

Can you:

	Yes	No	Uncertain
a) Setup a computer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Connect peripheral devices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Protect and care for floppy disks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Clean computer components and printers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Make backup copies of key documents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Diagnose and correct common computer problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Install an application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Upgrade an application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Identify proper operating environments for computers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Protect against viruses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Identify local resources for technical assistance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Have you had any formal training in computer setup, troubleshooting and maintenance in the form of short course(s) or part of specific programmes/qualifications (not self-taught)?			
<input type="checkbox"/> No			
<input type="checkbox"/> Yes. Please briefly describe the forms of training.			
<hr/>			
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m) Please list any problems you may have with computer setup, troubleshooting and maintenance.			
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THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

Appendix 2

Cover Letter of 2 July 2002

Re: The ICT knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal.

2 July 2002

Dear Colleague

**The information and communications technology (ICT) knowledge and skills of
subject librarians at the university libraries of KwaZulu-Natal**

The Subject librarian's role has changed rapidly in recent years, in response to new forms of information and new methods of teaching and learning. The explosion of electronic information (from CD-Rom to the Internet) requires continuous updating of knowledge and skills. These changes due to new technology and information systems require that all subject/information librarians have the necessary knowledge and skills to use electronic databases and to teach their library users how to use them. To this end, I am conducting research, for my Masters in Library and Information Studies, into the ICT knowledge and skills of subject librarians at the KwaZulu-Natal university libraries.

The study includes the libraries of the University of Natal, Pietermaritzburg (UNP), University of Natal, Durban (UND), which includes the Medical School (UNMED) and Edgewood, the University of Durban Westville (UDW) and the University of Zululand. The study also includes all branch/satellite libraries of these institutions. I hope that this research will not simply be an academic exercise, but will lead to a better understanding of what human resources in terms of ICT knowledge and skills exist in each institutions library and within esAL (Eastern Seaboard Association of Libraries).

Therefore, I would be most grateful if you could complete the attached questionnaire.

Yours sincerely

Ruth Hoskins

Main Library

University of Natal, Pietermaritzburg

hoskinsr@nu.ac.za / tel. 033 – 260 5060 / fax 033 – 260 5260