The impact of the Internet on reference services in higher education libraries in South Africa

By

Fatima Darries

DRRFAT001

A minor dissertation submitted in partial fulfilment of the requirements of the degree of Master of Library and Information Science

Department of Information and Library Science

Faculty of Humanities

University of Cape Town

2002

Contents

5. Findings of the Survey: Questionnaire

6. Findings of the Survey: Interviews

List of figures

Declaration

This work has not been previously submitted in whole, or in part, for any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Acknowledgements

My most heartfelt gratitude and thanks to the following people:

To my family, for their understanding when I could not fulfil family obligations

To my sister Shareen, for taking care of my son while I was working on the thesis

To my friends, for caring and proofreading the thesis

To my evening colleagues, for their encouragement and for allowing me time away from work to complete this project.

To my day colleagues, for proofreading the thesis

To the respondents and participants in this study, without whose contribution the study could not have been completed

To my supervisor, Associate Professor Mary Nassimbeni, for her support and guidance

Many thanks!

FD.

Glossary of abbreviations and acronyms

ARL	Association of Research Libraries
CALICO	Cape Library Co-operative
CD-ROM	Compact Disc Read Only Memory
CDRS	Collaborative Digital Reference Services
COSALC	Coalition of South African Library Consortia
CT	Cape Technikon
CTL	Cape Technikon Library Services
Data aggregator	Vendors of online databases characterised by the aggregation of hundreds of sources that can be searched simultaneously; extensive archives; a wide variety of sources; powerful search and output features; and automatic alert or current awareness search services.
DOS	Disk Operating System

DVD	Digital Versatile Disk, a optical disk technology product.
EIFL Direct	Electronic Information For Libraries Direct is a joint project between the Open Society Institute and EBSCO Publishing, providing electronic and print journals. The price of subscription is fixed for three years and the initial year's subscription was subsidised by the George Soros Foundation.
E-journals	Electronic journals
E-mail	Electronic mail
End-user	Typically the academic, the student and researcher in the academic library environment who performs searches in an online database to find information.
FTE	Full Time Equivalent, a measure used to calculate the number of students in higher education institutions.
FTP	File Transfer Protocol
Full text	Refers to online databases where the journal articles or source document is available as opposed to bibliographic databases where only the bibliographic details of an article or source are available.

Gopher	Internet application protocol, with hierarchically organised files. The Hypertext Transfer Protocol of the Web has replaced this.
GUI	Graphical User Interface is a graphical rather than textual user interface to a computer. Its elements include windows, pulldown menus, iconic images and mouse.
HAI	Historically Advantaged Institution
HDI	Historically Disadvantaged Institution
HTML	HyperText Markup Language
HTTP	Hypertext Transfer Protocol is a set of rules for exchanging files, including text, images, sound and video, on the Web.
ICT	Information and Communication Technology
Intermediary	The librarian who conducts a search on behalf of a library user.
Internet2	A new faster Internet being developed by the universities in the United States that will avoid the commercial Web's congested highways.

ISAD	Information Society And Development Conference
Invisible Web	Also known as the deep Web or hidden Web, it refers to the information on the Web that is not indexed by general search engines because of the search engines spider technology.
LIASA	Library and Information Association of South Africa
On-site user	A user who is physically in the library.
OPAC	Online Public Access Catalogue
Open Web	The resources on the Internet, excluding the subscription online databases and OPAC.
Reference librarian	All those librarians working in the reference services of a library, including, librarians with subject or faculty specialization.
Remote user	A user who is not physically in the library, and accesses library resources from a student residence, office or from home.
SBIGs	Subject Based Information Gateways

Terminal	A networked computer end-use device with a display monitor and keyboard, no software of its own, and relies on another computer or a mainframe for its functioning.
URL	Universal Resource Locator
User terminals/workstations	Computers libraries make available to their users to provide the users access to the library's electronic resources.
UWC	University of the Western Cape
UWCL	University of the Western Cape Libraries
VRD	The Virtual Reference Desk
Web	World Wide Web
Z39.50	A standard communication protocol used on the Internet for searching and retrieving of bibliographic information in online databases, including OPACs.

Abstract

Internet access has become an indicator of a country's socio-economic status in the Information Society. Libraries of higher education institutions support the parent institutions' objective to produce graduates able to function in this society. Consequently, the Web, the most popular part of the Internet, has become ubiquitous in reference services. This study investigates the impact of the Internet on reference services by exploring the following areas: user Internet access and training in the library, use and integration of the Internet as an information tool in reference services and the Internet training and knowledge of reference librarians.

An electronic survey was done using the Web and e-mail to distribute the questionnaire. The questionnaire was divided into six sections, and consisted of multi-choice answers with an open-ended question at the end of each section inviting further comments. The target population was the heads of reference services at large libraries and the directors at smaller libraries of the 36 higher education institutions in South Africa. Their e-mail addresses were obtained from the library or parent institutions' Web sites. A total of 90 potential respondents were e-mailed and 26 responded, representing 19 institutions and yielding a low response rate of 29%. Low response rates are however, typical of electronic surveys. A total of eight reference librarians at two institutions in the Western Cape were interviewed, representing both a historically disadvantaged institution (HDI) and a historically advantaged institution (HAI), and a technikon and university library. The interviews were structured and

consisted of mostly open-ended questions. The interviews lasted about an hour and were tape-recorded.

The results showed that all responding libraries have Internet access and all but one provided access to their users. On average, users have had Internet access for three and a half years. User Internet training tended to be on a one-to-one basis at the point-of-use. On average, reference librarians have had Internet access for five years. The majority of librarians have attended formal Internet training programmes. However, the librarians interviewed considered these to be introductory and gained the skills and knowledge by actual use and from colleagues. Librarians reported that the reference process took longer, that user search behaviour had changed and expectations had increased. While the majority of libraries had Web sites, only a small number of librarians had individual pages that they updated and maintained. The majority of libraries provided electronic reference via e-mail and the library Web site, but these are characterised by low usage. Finally, libraries tended to offer both end-user and intermediary searching to online databases. The study concluded, amongst others: that libraries lacked adequate computer facilities and consequently cannot provide optimal Internet access to students, and that librarians have integrated the Internet as an information tool but that libraries have not yet taken full advantage of what the Internet offers. The study recommends: that the bandwidth and number of student computer facilities be increased in libraries and that this problem be addressed at national government level, that libraries develop electronic reference as a core service, and that librarians increase their Internet and online instruction efforts by using e-mail, Web tutorials and virtual classrooms to reach more students.

Chapter 1

Introduction

1.1. Introduction

The Internet has become an important and popular source of information. The library, as a place that gathers together information and resources, should provide access to the Internet. Librarians should not only be able to search the Internet, but also provide instruction and guidance to the users of South African higher education libraries.

Society has progressed past the Industrial age to the Information Age, also called the Information Society. The Information Society has been described as being a society in which "the service by information and communication technologies (ICT's) underpins human activities" (European Commission, 1995). In South Africa's position paper to the Information Society and Development Conference (ISAD) recognition and high priority was given to educating and training South African citizens not only to survive but also to thrive in the Information Society (South Africa. Department of Arts, Culture, Science and Technology, 1996).

The rapid advances in information technology have resulted in a constantly changing environment. Most notably, the Internet has not only changed the way in which we work and communicate, but also the way in which business is done. The Internet is used in every industry as an information resource, marketing, communication and business tool.

The purpose of higher education institutions in South Africa is to educate and train. Therefore, these institutions must prepare their graduates to compete globally in the Information Society by educating and training their graduates to fully exploit the Internet.

Libraries play a central role in higher education institutions. These libraries serve to satisfy the information needs of all its users. Thus, libraries have collected information resources and provide services to support teaching, research and learning (Abdoulaye & Majid, 2000: 381). In today's society this has also required collecting and making available a number of electronic resources.

The successful library is largely dependent on an effective reference service. Reference librarians bring together the right information with the right user (Thomsen, 1999: 1). Faries (1994: 9) argues that the "traditional methods of providing reference services will no longer be adequate" as the Information Society is characterized by increasing technology. Reference librarians have to integrate electronic resources with traditional resources (Bates, 1997: 48). A successful reference service must therefore include end-user training in selecting the most appropriate resource and searching the different electronic resources, in order to achieve a match between information and user.

Abdoulaye and Majid (2000: 382) argue that the Internet has brought about a revolution in "information generation, access and use". As the Internet has become an important source of, and vehicle for information retrieval, reference librarians must be well versed in searching the Internet as well as instructing users in searching the Internet and information resources available via the Internet.

Tenopir and others have done a series of investigations on the effect of the Internet on reference services in United States and Canada. (Tenopir & Neufang, 1992a; 1992b; Tenopir & Neufang, 1995a; 1995b; Tenopir & Ennis, 1998a; 1998; Tenopir & Ennis, 2001) While work has been done in other developing countries, such as Pakistan (Saeed et al, 2000) and Malaysia (Abdoulaye & Majid, 2000), no such investigation has been carried out in South Africa. It is important that the availability and use of the Internet in South African higher education libraries is investigated, because graduates should be prepared for an increasingly technological and electronic working environment.

1.2. Research problem

This study investigates the impact of the Internet on reference services in libraries of higher education institutions in South Africa. The aim is to describe the reference service of higher education institutions in South Africa within the context of the Information Society.

1.2.1. Goals and objectives

The aim of this research project is to:

1. Establish to what extent students at higher education institutions have access to, and are given training on how to use the Internet in the library.
2. Assess the use of the Internet as an information tool and how well it has, or has not, been integrated with the other tools that reference librarians use.
3. Establish to what extent reference librarians possess the necessary training and knowledge enabling them to give Internet instruction and guidance to their users.

1.2.2. Research questions

The following research questions were framed to guide the investigation:

1. What do librarians use the Internet for: accessing subscription databases, search engines?
2. To what extent is the Internet used in their work?
3. What impact has the Internet had on training of reference librarians?
4. Is the Internet available to their users, and if so, how?
5. What training, if any, is offered to users on the Internet?

1.3. Clarification of terms

Terms needing clarification in this thesis will be explained in the chapter where they are introduced or in the glossary. The terms clarified here are those that appear in the title of the thesis.

The term 'Internet' has been used to refer to both the worldwide system of computer networks and the information that is made accessible by this infrastructure (Leiner et al, 1998). Thus, for the purposes of this study the term 'Internet' refers not only to the system of networks, but also to the information contained, communicated and disseminated by the networks.

Reference service may simply be defined as the "provision of information in response to requests" (Keenan, 1996: 45). More broadly, reference service may be described as helping the library's users make use of its collections effectively to satisfy their information needs (Rettig, 1986: 692). The librarians working in the reference service of a library are called reference librarians. The reference librarian may therefore be described as the librarian who helps users use printed and electronic resources to find information to satisfy their information needs. Reference librarians may also have "special knowledge of, and

responsibility for, a particular subject or subjects" and may then also be referred to as subject or research or faculty librarians (Sturges, 1997: 435).

Higher education libraries may also be referred to as tertiary education or academic libraries. This refers to libraries that form part of educational institutions at tertiary level, such as universities and technikons.

1.4. Related studies

In 1992 Tenopir and Neufang first reported on a survey done in 1991 amongst the Association of Research Libraries (ARL) in America. The member libraries consisted mostly of university libraries, with some public, government and special libraries (Tenopir, 1992a: 23). These libraries were surveyed again in 1994, 1997 and 2000. Tenopir and Neufang (1992a; 1992b) studied these libraries to discover what electronic information products they offered in their libraries and how these products have impacted on the work of the reference librarians. They found that all the libraries surveyed offer online intermediary, CD-ROM, and end-user searching on online and locally loaded databases. The vast majority had online catalogues. Their in-depth interviews with reference librarians revealed that the use of electronic products by their users also increased the need for user instruction. In addition, the instruction techniques and content of the training programmes also changed. The librarians interviewed also reported that the perception and expectation of users changed as a result of the immediate access users have to information. At this time the Internet was not widely used in libraries.

In 1995 Tenopir and Neufang reported on their follow up survey done in 1994. The four main electronic resources used in ARL, namely, tape-loaded databases available via the OPAC,

CD-ROM, end-user online and intermediary online had been expanded. The use of these electronic options by the users had increased. The majority of the libraries also offered Internet access to their users. They reported an increase in the time librarians spent on user instruction; this led to an increase in librarians' workload. At this time, Tenopir and Neufang (1995a) found that "These electronic resources are the first resort for patrons and staff, and their use has become integral to reference work".

In the 1994 follow-up study, Tenopir and Neufang (1995b) found that a third of the libraries were increasingly providing Internet access at all OPAC terminals. Librarians corresponded and answered queries via e-mail. Users looked for Internet access and information about the Internet in the library. Internet training for the librarians and library staff were done in a variety of ways, including an Internet training team to run Internet workshops for other library staff members. Internet training for users included dedicated training classes and informal one-to-one instruction at the point-of-use.

Tenopir and Ennis (1998a; 1998b) reported on a further survey done in 1997, on the impact of electronic resources on reference services. They found that the libraries surveyed had increased the number of workstations available to users. These workstations were not dumb terminals but higher-end computer and client servers. Intermediary search services had decreased, while end-user online searches increased beyond their expectation. CD-ROM and locally loaded databases were beginning to dwindle as libraries were moving to the Web version of commercial databases, or databases available remotely via consortia. Many of the libraries provided the Web version of these commercial end-user services. Almost all the libraries were also providing user access to the Web. Half the libraries provided Internet training to remote users (Tenopir & Ennis, 1998a). Tenopir and Ennis (1998b) also reported

on the changes in the attitudes of reference librarians and users, user instruction, workload and the workplace environment of reference librarians. Librarians reported greater user expectations and greater job satisfaction, a greater need for instruction at every level of computer skills and a greater workload as more resources were added without an increase in the number of staff. They also reported that reference interviews took longer and that user instruction had increased.

Tenopir and Ennis (2001) reported on the 2000 survey amongst ARL libraries. They found that the majority of these libraries offered more than 100 workstations/terminals to 10 000 or more students. While most libraries still offered some resources in all formats, the preferred format was the Web, while CD-ROM was being phased out. Intermediary searches decreased both in the number of libraries offering this service and number of searches being done. The majority (90%) provided end-user searching to an increasing number of online subscription databases that offer both bibliographic and full text articles on the Web. The librarians reported that users needed help with navigating the multi-faceted databases, e.g. finding a reference on the bibliographic database and using another database or e-journal to find the full text. Instruction on how to use the Internet and online databases were an integral part of reference services, with two-thirds (44 of 70) also providing remote instruction. Librarians found that reference questions were taking longer to answer. The pace of change continues to be a challenge to librarians, but many felt the new technologies have given librarians greater job satisfaction and updated the image of librarians amongst users and campus administration. Tenopir and Ennis (2001: 44) found that the technologies that make real-time virtual reference possible was having the most impact on reference services in 2000. Many libraries were receiving increasingly more reference questions electronically from online

reference forms, “ask a librarian” links on library Web sites, direct e-mail to the reference desk and real-time chat reference.

However, the above research was done in developed countries. South Africa is a developing country and has a history of separate and inequitable development amongst its institutions. Studies on the Internet and its impact on reference librarians in developing countries would be more comparable. Abdoulaye and Majid (2000: 383) studied the effect of the integration of the Internet in Malaysian academic libraries on reference services in particular. They looked at the librarians’ computer skills, Internet skills and training, and the use of the Internet for reference services. In addition, they explored the perceptions of the effect of the Internet on the job performance of reference librarians. They found that less than half had good Internet skills, more than half had Internet training, and those with good Internet skills used the Internet more frequently. The librarians they surveyed used the Internet less than 10% of their time per day to answer reference queries, and assisted users to search the Internet less than 10% of their time daily. However, Abdoulaye and Majid (2000: 388) noted that the Internet had been introduced as a tool in the reference services of these libraries only recently.

Saeed et al (2000) investigated Internet use in the university libraries of Pakistan. They found that only half of the libraries had Internet access. These libraries used e-mail and the Web frequently. The librarians used the Internet for reference services, acquisitions, cataloguing and classification, collection development, inter-library loans and document delivery. Saeed et al (2000: 147) also investigated the obstacles to further Internet use. They found that the universities lacked adequate computer terminals, connectivity and sufficient staff training.

They also found that only two of the 20 libraries that responded had their OPAC on the Internet.

In South Africa, Herholdt (1987) studied the development of online bibliographic resource systems and services offered to library users. Swanepoel (1989) looked at the other category of electronic databases, namely, source databases and found that source databases exist in sufficient numbers in South African universities and technikons to be used as a source of information for research. Currently, Rasodi (2000) is investigating the use of electronic databases in reference librarianship. Thus, while investigation into electronic databases in South Africa has been and is being done, no research has been done into the use and impact of the Internet on reference services.

1.5. Research methodology

This study investigated what Internet facilities were offered in higher education libraries in South Africa and the impact on the reference librarians. The research was exploratory in that it aimed to gather information to create an understanding of the current situation in South African libraries with regard to Internet use. An electronic questionnaire was used to gather the quantitative data and interviews were used to gather the qualitative data needed to answer the research questions. Both instruments were based on the work of Tenopir and Neufang (1995).

The target population for the research was the reference librarians in the 36 higher education libraries in South Africa. For the interviews a sample of reference librarians was drawn from the reference librarians in the Western Cape, representing both a historically disadvantaged (HDI) and historically advantaged institutions (HAI), as well as both university and

technikon libraries. The research methodology and data collection are dealt with in greater detail in chapter 4.

1.6. Outline of the chapters

The following is the structure and outline of the chapters in this thesis.

Chapter two and three provide the context of this study based on the review of the literature. Chapter two describes the electronic environment in which librarians work, including the Internet. Chapter three discusses the impact the electronic resources have on the work of reference librarians and how librarians have made use of the opportunities the Internet has brought to reference services.

Chapter four discusses the research design and methodology. The survey methodology and data collection instruments used in this study are described and discussed. The sampling, the distribution of the questionnaire and the way in which the interviews were conducted are described.

Chapter five and six present the findings of the survey and the interviews respectively, illustrated by tables and graphs. These two chapters cover issues concerning user and reference librarian access to the Internet and online databases, reference librarian involvement in the library Web site and electronic reference, users' and reference librarians' training on the Internet and the impact of the electronic environment on reference librarians.

Chapter seven presents the discussion on the findings of the questionnaire and interview.

Chapter eight makes a number of recommendations encompassing national bodies and individual libraries.

Chapter nine concludes the thesis with a summary of the study and recognition of the limitations with suggestions for further research.

Chapter 2

Electronic environment of academic libraries

2.1. Introduction

This chapter examines the electronic environment in higher education libraries by looking at the introduction and development of the OPAC, CD-ROMs and online subscription databases, and the Internet in libraries. These resources form the electronic environment in which librarians offer a reference service in the higher education library.

2.2. OPAC

One of the very first areas of technology introduced into the library was the automation of the library catalogue. These are known as Online Public Access Catalogues, or OPACs. When the OPAC was first introduced in the mid 1980's, it was on a monochrome screen, on Disk Operating Systems (DOS). It provided more access points to the library's catalogue than was possible with a card catalogue.

During the 1990's, the circulation function was integrated on the OPAC, allowing users to see whether the book was available and if not, when it would become available. Current advances allow users to place reservation from an OPAC terminal themselves (Murphy: 1998). Technical services were also integrated with the OPAC, giving users improved access to information about forthcoming acquisitions (Murphy, 1998). User interfaces have moved from text command driven to Graphical User Interface (GUI) and the Web version available on the Internet (Babu & O'Brien, 2000: 316). OPACs were originally made available to the users by means of terminals, but are now available to users from microcomputers. Freivalds

and Carson (1991) are of the opinion that the advances in microcomputers are one of the reasons for the advancement in OPACs. They argue that as the technology that supports the OPAC continues to develop, so will the OPAC continue to progress. Consequently, how we define OPACs will continue to change.

The rapid growth of networked OPACs in various consortia, standards such as Z39.50 and the application of Web technology to OPACs, enable users to search not only their local library catalogue, but also other library catalogues and other library resources. Local area networking allows CD-ROMs to be made available on the OPAC (Murphy, 1998). Other databases such as periodical indexes, encyclopaedias and dictionaries, and full text databases, can be added to the online catalogue (Bordeianu, Carter & Dennis, 2000: 113). Remote electronic journals, Web sites and electronic books are also catalogued and rendered searchable on the OPAC. A hypertext link is made from the OPAC record to the site of the electronic resources (Hruska, 1995; Bordeianu, Carter & Dennis, 2000: 112-3). Thus, not only has the content of the OPAC evolved, but so also has the level of access to information.

Web OPACs enable libraries to make their catalogues available to a wider public on the Internet, opening the library resources to the world. Users are able to access not only their own library's collection, but also that of other libraries in a consortium and other online databases via the OPAC, from any location twenty-four hours a day, seven days a week. Users have access to the resources of the world (Farmer, 1999: 34), with the OPAC becoming a gateway to information globally.

These developments create an electronic environment that comes close to the ideal of the OPAC being a one-stop shop with a "common user interface" to various databases.

However, while a common user interface may be possible technologically, not all libraries will opt to use it, considering such issues as loss of functionality (Peterson & Lowry, 1995). The ubiquity of the Web makes means that users are becoming increasingly familiar with the Web environment, and are therefore not disadvantaged by the lack of a common user interface in the form of the OPAC (Harmsen, 2000: 110).

2.3. CD-ROM databases

CD-ROM is an acronym for compact disc read-only memory and is defined as "a computer-based information storage and retrieval medium based on laser technology and a strong, highly resistant 4.75 inch- diameter disk" (Jascó, 1997: 51).

CD-ROM databases were introduced into libraries in the mid 80's (Tenopir, 1989: 50). There are two types of CD-ROM databases, namely, textual CD-ROMs and multimedia CD-ROMs. Initially, the databases available were mostly bibliographic or bibliographic with abstracts (Tenopir, 1989: 51). Encyclopaedias and dictionaries have now been incorporated in the range of products available on CD-ROMs in libraries.

The most widely used CD-ROM databases are bibliographic and bibliographic with abstract and/or full text databases. When the CD-ROM database was introduced initially, it provided a huge improvement in searching as opposed to manual searching in printed publications. It provided

> Unprecedented access to almost any word in the record ... It takes a few seconds to qualify and re-execute a search by limiting the search term to

> title and major descriptor fields, to feature articles with colour photos. (Jascó, 1997: 52).

Another improvement on the manual search was that CD-ROM allows for selecting and printing of the relevant references, and allows the organisation of the selected set according to the preferences of the user, e.g. by date, journal title. Most recently links have been made in the CD-ROM database records that connects the user to a remote site via the Internet. Clicking on the link in the record launches the Internet browser and takes the user to the URL (Jascó, 1997: 52).

Initially, the majority of the databases were available in both print and CD-ROM format (Tenopir, 1989: 50). However, as electronic publishing developed, the trend has been to make databases available in CD-ROM or online format rather than print. The same data files are also available with different search software and "for different operating system environments and hardware platforms" (Jascó, 1997: 52). Thus, libraries can now easily integrate CD-ROM databases with existing hardware and operating systems. As with OPACs, the user interface of the CD-ROM has also developed from menu-driven to the Windows version, with different levels of search options for the novice and advanced user (Jascó, 1997: 52).

CD-ROMs can be networked. This can be done on a local area network, with the CD-ROM housed in a 'tower' of CD-ROM drives for access within in the library or campus wide. It can also be accessed via the catalogue records describing the CD-ROM on the library's Web OPAC. The CD-ROM can therefore, be accessed from remote locations (Van Brakel, 1993: 31). However, networking CD-ROMs depends on licensing agreements, and library budgets.

Networking CD-ROMs is a costly exercise, not only because of the networking hardware, but also because networking agreements are expensive (Pretorius, 1996: 28).

Multimedia CD-ROM databases are more expensive to run than textual databases because they require multimedia PC's in order to run them (Jascó, 1997: 52). Although multimedia databases are mostly available in CD–ROM format, Tseng (1997: 329) has predicted that high-speed connection to online databases via the Internet will bring an end to this. However, Nicholls (1998: 54) argues that accessing multimedia information on CD-ROM is still faster than a high-speed connection, because of the unreliability of traffic on the Internet. Therefore the online multimedia databases will not proliferate despite high-speed connections. Optical technology, either CD-ROM because the drives are easily available, or DVD (digital versatile disc) as it becomes more inexpensive, will continue to provide the faster, easier access to multimedia information. Nicholls (1999: 69) arguing against the demise of the CD-ROM, says that "optical media are more similar to books than to online" because both books and optical discs are portable, and "physically selected, acquired, collected, loaned, and preserved". Thus, the CD-ROM, like the book will not die out but will continue to be used in conjunction with other electronic media.

2.4. Online subscription databases

Online databases

> Involve the use of a computer terminal or microcomputer to interact with a remote database, or an organized collection of information in machine-readable form, through a telecommunications line or enhanced phone connection (Maloney, 1986: 612).

There are two categories of databases, namely, bibliographic databases in which citations may be found, and full text databases in which the source documents itself can be found (Maloney, 1986: 613). However, in practice there is no clear distinction between the two, because the same database can provide both bibliographic and full text information, depending on what libraries can afford.

Bibliographic databases provide references to many years of published literature in a subject area. The information provided in such databases would typically include the author, title, and source, as well as indexing terms and abstracts. Full text databases provide not only references to a document, by citing the author, title, indexing terms and abstracts, but can also provide the entire text of the source document. Such databases usually also offer a search option that searches the text of the documents (Maloney, 1986: 613). This is particularly useful when the end user of the database is not familiar with subject descriptors that indexers use but has knowledge of the subject matter. Other databases include numeric databases, directory and dictionary databases and reference databases such as books-in-print (Maloney, 1986: 614-616).

Ojala (1999) has identified four phases of the development of online database services. Firstly, the Batch era which involved inputting your query and waiting a day or two to receive results. Secondly, the Interactive generation that required entering into an interactive dialog with a database. Typically this meant inputting your query, receiving immediate results, and, if necessary, redefining your query and receive the next results. Thirdly the Dynamic generation, which involves

> A multiplicity of sources, various channels of communication, mutability both of information and of access to that information, and constantly changing definitions of even the most basic building blocks of information" (Ojala, 1999).

Finally, the Intuitive generation, which involves "software that learns from our searching behavior, by blended technologies, by collaborative techniques, and by knowledge creation" (Ojala, 1999). The latter generations of online databases have not as yet come to full fruition. We are therefore currently in the third, dynamic era.

Notess (1998) identifies 1998 as the year that online databases moved to the Web with "Web-based search systems and greater sophistication from database vendors in their delivery of database information over the Web". Web access was provided either by loading databases locally, or by making it directly available on the Web (Notess, 1998). Web-based databases became a reality in South African libraries when SABINET Online moved from its Erudite system to its Magnet version on the Web at the end of 1998 and beginning of 1999.

During this time the online database industry was unstable. Database producers can circumvent the vendors by publishing on the Web and reach the end-user directly. However, Tenopir (2000) argues that aggregators provide a value-added service because

> They provide aggregation of hundreds of sources that can be searched simultaneously; extensive archives; a wide variety of sources; powerful search and output features; and automatic alert or current awareness search services.

Tenopir (1998) argues that online vendors, also called "data aggregators", will survive if they attain "critical mass in collection size, customer size, number of services, and assets". To this end, Tenopir and Barry (1999: 41) report that data aggregators are making international links, as well as linking with their competition in specific projects. Factiva, a company that is a subsidiary of both Reuters and Dow Jones, who are competitors, is an example of this trend (Factiva, a Dow Jones & Reuter Company, 2000).

Aggregators link the secondary publishers to the full text source documents, providing both bibliographic and full text databases (Notess, 1998). EBSCOhost, as well as FirstSearch, are examples of this trend. Data aggregators are also investing in retrospective projects to index past publications like Wilson and Chadwyck-Healey, thereby increasing the content and collection size of their service, and increasing their chances of survival (Tenopir & Barry, 1999: 42).

Online vendors may charge connect–hour charges, print or display royalties and telecommunication charges (Maloney, 1986: 616). This makes it very costly, especially for South African libraries that have to pay in US dollars. It also makes it difficult to budget for, as the total cost of the searches is difficult to predict. Because it is so costly, librarians would usually do the searches for the user. However, Tenopir and Barry (1999: 42) report that aggregators place great emphasis on deals with consortia. This usually involves the vendor or producer of the databases offering a group of databases, usually on a per annual subscription basis to libraries at a predetermined price, by means of a site license. This license allows on-site and remote students and staff to conduct as many searches as they like. Libraries can budget for this and library users can search these databases themselves.

The benefit for the aggregators is the potential of reaching the end-users of libraries that are part of a consortium whose individual members could not afford the databases. In South Africa, OCLC has made FirstSearch available via SABINET Online to South African libraries as a base package. This base package has a significant price reduction for developing countries. By making such exemptions and special deals, the aggregators are increasing the size of their customer base that are familiar with their current product and are potential buyers for their other services.

2.5. The Internet and the World Wide Web

The Internet, or its precursor, ARPAnet, was created in 1969 by the United States government (Chamberlain, 1997). During the 70's and 80's ARPAnet evolved into what is known as the Internet. During this time the government and scientific community in the United States were the primary users. During the early 90's the Internet became publicly known and its use expanded rapidly with the development of the Web.

The underlying idea driving the evolvement of the Internet was a worldwide interconnection of networks, which would provide the infrastructure to facilitate access to information and a medium for interaction between individuals from any site despite its geographical location by 'internetworking architecture' (Leiner et al, 1998).

The terms for the Internet and the World Wide Web are often used interchangeably. The Web or WWW or World Wide Web was first developed by Tim Berners-Lee and released to the public in 1991 (Cailliau, 1995). The Web is the part of the Internet that is most widely used. The Internet, on the other hand, is the worldwide system of computer networks. The Web

refers to the information that is made accessible by the infrastructure of the Internet. In particular, the Web refers to all the resources and users on the Internet that use the Hypertext Transfer Protocol (HTTP) (Whatis.com, 1999). This is a set of rules for the exchange of files that enable the author of the files to create references from one file to the other with the use of Hypertext Mark-up Language (HTML). HTML creates hypertext links, which allows a receiver of information to select files by clicking on the link (World Wide Web Consortium, 2002). In order to view the information in the files and interact with it, the receiver, the Internet user, needs to have a browser. A browser is an application program that allows the browser user to do just that, i.e., view and interact with the information on the Web using HTP. The first browser to be developed was called Mosaic. Currently, the most widely used browsers are Netscape Navigator and Microsoft Internet Explorer (Whatis.com, 1999).

The objectives of the development of the Web as stated in Berners-Lee's proposal to the CERN (European Laboratory for Particle Physics) were, amongst others,

> The provision of a simple protocol for requesting human readable information stored in remote systems accessible using networks; [provision of] a protocol by which information could automatically be exchanged in a format common to the information supplier and the information consumer; to allow documents or collections of documents managed by individuals to be linked by hyperlinks to other documents or collection of documents; the provision of a search option, to allow information to be automatically searched for by keywords, in addition to being navigated to by the following of hyperlinks; [provision of] the necessary software free of charge (Feizabadi, 1996).

Feizabadi (1996) argues that the creation of the Web and the release of the Mosaic browser, the first web browser, are the two most important factors for the ubiquity of the Internet.

The Web is searched with the use of search engines. Search engines are essentially indexing or directory services (Sherman, 1999: 54). Most search engines index a representative portion of the entire content of the Web. A search engine is composed of three parts: a spider that reads every page on a Web site that wants to be searchable, a program that creates an index of the pages and a program that receives the request of the search engine user, searches the index and return the results (Whatis.com, 1999).

However, Web search engine technology only allows for key word searches. Searching on the Web has been described as being "bad" and does not measure up to searching on traditional online databases (Sherman, 1999: 54; Garman, 1999: 6). The only output format of Web search engines is relevance ranking, which is inadequate. Therefore, rather than trying to provide comprehensive coverage of the Web, search engine developers are working on improving relevancy (Sullivan, 1999: 30; Notess, 1999b). There is therefore information on the Web that is not indexed by search engines; this is referred to as the invisible Web, deep Web or hidden Web (Bergman, 2000: 3; Price, 2001).

One of the problems with the Web is the congested traffic and the consequent slow downloading speed. United States universities and federal government is developing a new Internet, Internet2 and Next Generation Internet. These two projects aim to provide faster connection and avoiding the clogged highways of the commercial Web (Fingerman, 1999: 44). Internet2 is already being used in universities and research laboratories by academics (Dodson, 2001).

2.6. Summary

The introduction of the computerised catalogue, the OPAC, started the electronic revolution in the library. In the space of two decades the resources available in the library have evolved from just print based to networked CD-ROMs and dial-up access to online information services, to Web-based OPACs and databases. The library now offers access to information in an array of resources in both electronic and print form.

Chapter 3

Reference librarians in the electronic environment

3.1. Introduction

This chapter is a review of the literature on the new role of the reference librarians in the electronic environment. It looks at the impact of the electronic resources on reference librarians and how librarians have coped with and taken advantage of the new opportunities that advances in technology presented.

3.2. Impact of electronic resources

3.2.1. Disintermediation

There are two types of users of electronic resources in the library, namely, intermediary and end-user. The intermediary is typically the librarian who conducts a search on behalf of a library user. The end-user is typically the academic, the student and researcher in the higher education library environment who performs searches on online databases to find information (Geyser, 1992: 168). With the advent of the automation of the library catalogue, library users became end-users for the first time.

Initially, the search facility of online databases was developed with the expert user in mind. Consequently, the librarian with expert knowledge of how to search the online databases searched these as intermediaries. It was more cost-effective for the librarian to do the search because of per unit search pricing (Maloney, 1986: 616). Data aggregator services have

migrated to the Web and have been developed with the end-user in mind, both in the search interface and the cost. Consequently, libraries are providing the online databases directly to the users (Tenopir, 1998; Notess, 1998). Librarians have less of an intermediary role to play between online databases and users. The studies of Tenopir and others amongst the ARL libraries found a decrease in the number of intermediary searching and an increase in end-user searching (Tenopir & Neufang, 1995a; Tenopir and Ennis, 1998a; Tenopir and Ennis, 2001: 44).

Kyrillidou (2000) argues that with the increase in the number of electronic resources in the library, the popularity of the Web and remote access to a library's electronic resources came a decrease in the number of library transactions.

In addition to these developments, the increasing knowledge of and use of new technology by users and the Web availability of traditional print and CD-ROM resources resulted in fear amongst some librarians (Hathorn, 1997). These librarians are concerned that "access to the Internet will become so universal that libraries may become superfluous" and librarians obsolete (Pollitz, 1994: 128). Hathorn (1997) calls this the 'Redundancy theory'.

At the other end of the spectrum is the belief that the reference librarian will play a central role "as masters of the universe in a world increasingly reliant on information" (Hathorn, 1997). They believe that there will be a larger role for people to organize, filter and locate information.

In reality the role of librarians and place of libraries will be somewhere between the two views. Several authors have explored the roles reference librarians in the electronic

environment. White (1995: 45) argues that the belief that reference librarians will become extinct is based on the incorrect assumption that the users will want to do the searches themselves. He believes that users prefer an information intermediary [because] for almost all end-users the “search for information is a means to an end and not an end in itself" (White, 1995: 45). Similarly, Mood (1994: 28) argues that reference librarians should provide users with the information and give users a choice of articles or books by experts. This will result in users “who can spend their time reading, absorbing and applying the information provided, not involved in the search process itself” (Mood, 1994: 28).

Ritch (1991: 70) suggests reference librarians become "reference consultants who can give specialised advice and evaluation" to the user who is overloaded with the information retrieved. Thus, reference librarians remain the intermediary but no longer only between the database resources and the user, but also between the document or source and the user. Reference librarians do so by linking "content from multiple sources" and by providing the context of information in the broad spectrum of knowledge. This requires both a subject specific knowledge and general knowledge (Hale, 1991: 18).

Gomez Borah (1992: 139) argues that the traditional role of the reference librarians have primed them for the new role of “primary architect of the tools of information's future." Similarly, Weaver (1996: 32) sees the reference librarian as a facilitator who being aware of user information needs, can provide valuable input to the publishers of online databases.

3.2.2. Learning and searching

Despite the emphasis on end-user searching, librarians also use and conduct searches on electronic resources. With the online databases, as well as the OPAC on the Web, librarians have to be trained on the Web version of the electronic resources in their library. Van Brakel (1997: 235) points out that the technology of the Web is constantly developing. Reference librarians, therefore, have to learn new searching interfaces of the Web-based online databases and OPACs as advancements are made and new versions are released. Similarly librarians have to stay up to date with new developments on their CD-ROM databases (Van Brakel, 1993: 33). While the vendors or producers usually offer training on their databases, the reference librarians have to stay up to date on the developments on and specialties of search engines and search directories themselves (Maloney, 1986: 616).

With the introduction of the Internet into the library, librarians have had to integrate the Internet into their toolkit, and learn when to use this tool and for which jobs this tool would be most effective. Reference librarians have developed the skill to judge "the possibility of finding the information on the Internet and whether it is worth [time and cost effectively] getting it there" (Bates, 1997: 47). Stover (2000: 45) found in a study on reference librarians and the Internet that reference librarians used their professional judgment by deciding between the resources in electronic and printed medium, and selecting the one that is most suited to meeting the user's information need. Having decided on the Web as the best source of information to answer a query, librarians have to search the Web.

In order to search the Web effectively, reference librarians have developed a “new search rhythm” (Klopper, 1999). The Web was developed to load page by page and if there are any graphics on the page it will slow down the loading of the information. In addition, the search

functionality of the Web is unsophisticated and only allows for keyword searches (Klopper, 1999). Search engines retrieve lots of irrelevant information which librarians have to work through to find the relevant information, usually at a snails pace. This situation is a source of frustration for librarians (Klopper, 1999).

Because search engines do not index the same Web sites, Mickey (1999: 79) argues that more "effective results come from casting the same Web search query over several search engines". However, it is not sufficient for the librarians to do so or to use a meta-search engine (a search engine that searches several search engines). Librarians also have to keep up with the advances in technology in each of the search engines. Librarians must stay informed of these developments in order to have a good base to construct an exhaustive search strategy. Furthermore, effective search engine use requires an understanding of each search engine's "functionality and syntax" (Mickey, 1999: 79). For a comprehensive search on the Web, reference librarians also have to search the invisible Web, by using targeted crawlers that humans guide to specific sites to index at more depth that the general search engines do not. However, the best way to access the invisible Web is to know what is available before it is needed (Price, 2001). Reference librarians are used to conducting a comprehensive search of a database using a single search interface. On the Web they have to not only know how to use more than one search engine, but also which search engines would cover the topic under investigation and have subject specific knowledge of Web resources.

Therefore, it seems the new search rhythm includes selecting the most appropriate search engines and databases, constantly learning how to search on each of these, and patience as the information slowly downloads.

3.2.3. Reference librarians as instructors

The main function of reference librarians has been to provide assistance to users in finding the information s/he needs to satisfy an information request. This function is extended to bibliographic instruction that teaches users what they need to know to find the information they want (Faries, 1994: 11-12).

Reference librarians provide bibliographic instruction, teaching users how to use library resources, whether print or electronic. Thus, reference librarians must not only be proficient in searching the many CD-ROM and online database, and the open Web, but must also be able to instruct the users (Newton et al, 1998). User instruction in the higher education environments sometimes requires teaming up with other professionals (Kalin & Wright, 1994: 197). Reference librarians instruct users on how to search each search interface on the various CD-ROM and online databases and "how to frame their search strategies systematically and efficiently", which includes teaching users the use of Boolean search operators (Pretorius, 1996: 30).

Tenopir (1999: 278) in reviewing the results of the ARL studies conducted during the 90's, reports that formal instruction classes are offered, sometimes beyond the library walls, and even via the Web. One of the objectives of such classes would be an information literate user group. As users become more familiar with online resources, instruction is moving away from technical aspects of databases to the content of databases and use of materials. When instruction is being done on a one-to-one basis at the point-of-use, it impacts very heavily on the reference librarian's time as more time is spent with each user. These results were supported by the results of the 2000 ARL study, in which Tenopir and Ennis (2001: 43) found that instruction on how to use the Internet and online databases are an integral part of

reference services, with many libraries also providing remote instruction. Librarians reported that many queries also involve instruction on how to access and utilize the electronic resources. This includes teaching users database coverage, Boolean logic, search commands and scholarly information process and helping students evaluate the resources they find (Tenopir & Ennis, 2001: 44). Stover (2000: 46) too found that in the electronic environment the teaching function of the librarian is emphasised. Librarians reported the need for teaching users to evaluate the information found to ensure authority of information found.

3.3. New opportunities, more work

The ideal of a 'one-stop shop', where users would use an integrated resource to access all the resources in a library have been manifested in two approaches in libraries. Libraries have either developed the OPAC or the library Web site as the integrated access tool. These two tools have become increasingly complex (Cook, 1994: 69; Nelson, 2001: 48). Although reference librarians assist users with retrieval at the point-of-use, they also facilitate retrieval by assisting with the description of the electronic resources in the catalogue and the presentation the electronic resources on the library's Web site because of their knowledge of user searching behaviour.

Librarians have been involved in creating their organisation's Intranet. In the higher education environment this would mean the institution's or the library's Intranet. Intranets are "mini-Internets, rich information oceans where information is gathered, selected, organized, and used by staff at all levels of the organization" (Fichter, 1999: 107). The Intranet is used not only as an information tool, but also for communication and collaboration to increase productivity and improve service delivery. In higher education libraries, Intranets are used to support the daily functioning of the library, "for sharing reports and minutes, policies and

procedures, human resources forms etc" (Fichter, 1999: 108). Reference librarians, often in collaboration with others, have been involved in the content development of their library and organisation's Intranets (Notess, 1999a: 74).

In addition to Intranets, higher education libraries also have Web sites. A library's Web site usually includes information about the library, as well as giving access to the electronic resources available in the library. The access to electronic databases is usually limited to their primary user group. Reference librarians as users of the Internet and having first-hand knowledge of user needs, have been involved in the development of library Web sites. In addition to developing the Web site of the library, librarians have also been involved in helping academics on campus to set up their Web sites or providing the training for Web authorship (Evans, 1999: 309).

Reference librarians have set up personal Web pages as part of their professional duties. These Web sites are used to create Web guides and Web bibliographies (Weaver, 2000: 171). The guides, also called Subject Based Information Gateways (SBIGs) are usually subject specific and the Internet resources included are evaluated and selected by individual reference librarians or in collaboration with faculty members (Morville & Wickhorst, 1996: 27-28) The guides are usually designed around specific subject and interest groups, such as a specific course or faculty (Newton et al, 1998). Recent advances have made it possible to not only provide open Web resources on these guides but also to integrate the library's electronic resources and new services such as table of contents. These integrated guides are called Portals (Johnston & Nicolle, 2000). This new role of filtering and selecting information on the Internet "so that it may be synthesised into knowledge and creating knowledge maps to

allow the initiated to navigate in unfamiliar academic areas" has led to the coinage of another term for the reference librarian, as Access engineer (Silva & Cartwright, 1994: 61).

In order to design their individual pages and participate in the design and development of the library's sites, librarians had to increase their technical knowledge and developed Web evaluation, design and development.

3.3.1. Electronic reference

Libraries have made their online databases and other electronic resources available to remote users via their Web sites. As a natural consequence, libraries are also providing electronic reference services. Electronic reference service is also referred to as digital reference (Janes, Carter & Memmot, 1999: 146), online reference service, "ask-a" service (Schneider, 2000: 96) and virtual reference service (Tenopir, 2001: 38). Janes, Carter & Memmot, (1999: 146) defines electronic reference as:

> A mechanism by which people can submit their questions and have them answered by a library staff member through some electronic means (e-mail, chat, Web forms, etc.), not in person or over the phone.

A review of the literature shows numerous articles from the mid 80's to the present, with an increase recently, from about 1999. Most libraries started off with e-mail reference, which later included a Web form and later progressed to chat. The literature of the 80's, like those of Howards and Jankowski (1986) and Wiese and Borgendale (1986), examined the use of e-mail to communicate with the users. The most notable finding of the studies was the low user response to the service.

During the 90's, the literature looked at the management of e-mail reference and its implications. A study conducted by Bristow (1992: 631) showed that most users valued e-mail over telephone service. In a later survey Bristow and Buechley (1995) found that the first choice of all the reference librarians was in-person queries and the second choice was divided equally between e-mail and telephone queries (Bristow & Buechley, 1995: 460). Abels (1996: 347) developed a model of the e-mail reference interview. The e-mail reference interview consists of three messages. The first is the form submitted by the user. The second is the summary of the librarians understanding of the users information need, which is sent to the user. The third is the confirmation of the summary by the user and sent to the librarian.

Some of the advantages are:

- E-mail allows the user to send the request when it is convenient and the librarian to read and respond when it is convenient. Search results can be sent via e-mail, which is not possible via telephone (Abels & Liebscher 1994: 191).
- Many databases, including OPACs, now allows the results to be e-mailed directly to the user from the database. E-mail reference also allows distance education students' access to and response from a librarian without having to call long distance on the phone (Schneider, 2001: 96).
- It allows librarians to give more in-depth help than they give over the phone and at the reference desk (Gray, 2000: 367; Tenopir, 2001: 38).

The literature of the late 90's and early 2000's show how electronic reference is expanding and introducing real time, synchronous, or live reference service. Oder (2001: 47) argues that year 2000 brought real time reference to several higher education libraries. Janes, Carter and

Memmott's (1999: 148) study of 150 academic libraries in the United States, found that close to half offered digital reference services. However, none offered a real-time service. Tenopir (2001: 38) reports that all but one of the 70 ARL libraries offered an e-mail reference service and many of the libraries are planning real time, virtual reference. Francoeur (2001: 190-191) analysed the chat reference services offered around the world and found that 272 libraries offered a chat reference service and the majority of the libraries were in a consortia and were higher education libraries. There are many reports of the implementation of real time reference services and the experimentation with software in the literature. Boyer (2001), Stormont (2001), and Eichler and Halperin (2000) reported on their respective experiences of new chat technology in reference services and Sloan (2001) reported on the experience of Web call centre technology in a consortium of higher education libraries. These libraries have been using chat, Web conferencing, Web contact centre software and chat rooms in commercially provided Web site. Stormont (2001: 129) describes live electronic reference as patrons to submitting reference questions using a computer and receiving immediate responses. This service provides a response within seconds, as contrasted with e-mail reference, which could take hours or days. Some of the other advantages of real time reference are:

- The software they developed allows co-browsing, the user can see what the librarian is doing and vice versa;
- Form sharing allows the user to share search strategy and other text on Web forms; ability to share files and slideshows with the user;
- Scripted messages and bookmarks to handle routine functions and requests;
- Logging and capturing of reference sessions for future analysis;

- Queuing and routing of incoming questions and the ability to conference or transfer a call from other libraries to the system (Stormont, 2001: 149)

These advances in technology have brought another level of collaboration between libraries. Libraries have used local consortia to initiate regional reference services. Some of these libraries are also looking for partner libraries in other countries and time zones to provide reference services through the night (Oder, 2001: 47-49). The most notable of such attempts at global consortia or partnerships is the Virtual Reference Desk (VRD) and Collaborative Digital Reference Service (CDRS). The VRD is working towards creating a network of digital reference services, connecting users with the most appropriate expert, supporting the development of electronic reference services by developing software to support the service and providing instruction and support to organizations building such a service and conducting research on electronic reference service (About VRD, 2002). While the VRD is attempting to provide users' guidance on Internet based information, the CDRS, launched in 2000 by the Library of Congress, aims to go further, by providing users with a network of libraries that also provide them with information that is held at those libraries (What is CDRS, 2002). To realize their vision of a global reference network that will provide a reference service to users anytime, anywhere, the Library of Congress are collaborating with the VRD and OCLC. Other participants include more than 100 academic and national libraries from, amongst others, Canada, United States and Australia (Mayfield, 2000; Oder, 2001: 48). Such developments will serve as competition for the commercial ask-a services like AskJeeves, About.com and Help.com. The developers of the CDRS hopes to provide the response time of the commercial services, but also to provide full quality answers and access to information that may never be available online (Oder, 2001: 48).

Dilevko (2001: 219) argues that in the "call center" model of electronic reference, the reference librarian is merely,

> A technological gatekeeper, a guide who makes minor intellectual contribution beyond the perfunctory act of steering user to the best Web sites or databases without knowing a great deal about issues underlying the user's request.

Dilevko (2001: 220) argues that this role de-professionalizes the reference librarian, and suggests that reference librarians read extensively to enable them to make the intellectual connections that add value to the reference transaction.

3.4. Summary

The evolution of electronic information has changed the way the higher education reference librarians do their work. The proliferation of and technological advances made in the electronic resources available in the library have made these increasingly complex tools for users to negotiate on their own. While the function of reference librarians is to assist users to find information to satisfy their information need, other aspects of this role have become more prominent. The reference librarians have become more of a teacher and facilitator in the electronic environment. The Internet, and the Web in particular, has also challenged and brought new opportunities for the reference librarian who brings the right information to the right client in an age of abundant information. The role of the reference librarian should be determined by the user's information needs.

Chapter 4

Research Design and Methodology

4.1. Introduction

This chapter is a description of how the research and data gathering was conducted. It includes a description of the methodology used and the reasons why the methodology was considered to be suitable for gathering the information needed to answer the research questions.

4.2. Methodology

The primary objective of this study is to explore and identify Internet usage in reference services in higher education libraries in South Africa. The survey methodology was selected to investigate the usage and the impact of the Internet as it can yield current information quickly from geographically dispersed sources.

According to Busha and Harter (1980: 54) the survey methodology is used to "obtain empirical knowledge of a contemporary nature". The data that is obtained can be divided into three broad classes of data

> (a) Information about incidents and developments (data about events in a given period); (b) information about distributions and frequencies (data concerning the possessions or characteristics of each member of a subject group); (c) information about generally known rules and statuses (data about institutional norms and conditions) (Busha & Harter, 1980: 54).

The survey method, having these characteristics, was selected because the purpose of this study was to investigate the current Internet facilities available, the extent to which the Internet is being used in higher education libraries and the extent to which the Internet is being accepted and used by reference librarians in particular. The survey method being fact-gathering in nature was therefore perfectly suited to collect the kind of data needed to answer these questions. The study was conducted to investigate the current conditions in higher education libraries, and not to determine causal relationships between variables or to test

hypotheses. It can thus be classified as a status survey or exploratory survey (Busha & Harter, 1980: 55; Powell, 1991: 54).

4.2.1. Data gathering tools

To investigate the research questions, both qualitative and quantitative data were needed. The data on Internet usage and instruction is more quantitative in nature, while the data regarding the impact of the Internet on references librarians is more qualitative. A self-administered questionnaire was used as the primary data-gathering instrument to collect data that are quantitative. The personal, structured interview method was used as a secondary data–gathering tool to collect qualitative data. Both were based on the instruments used by Tenopir and Neufang (1995a; 1995b).

Care was taken to make the questionnaire as easy as possible to access and return in order to overcome non-response bias. The questionnaire was made available on the Web, as well as MS Word and plain text documents. Furthermore, when the time by which the respondents had been asked to reply had elapsed, a reminder was sent out by e-mail to those who had not responded.

The personal structured interview was selected to counteract some of the limitations of the questionnaire and to collect more qualitative data.

However, as with the questionnaire, there are some possible problems that the researcher should take care to avoid with the personal interview. The disadvantages associated with the personal interview revolve around the bias that may be introduced by the researcher or interviewer because of the personal contact between the researcher and respondent. To overcome the possibility of interviewer bias in this study, the researcher held the interviews in a private setting and kept the interview as informal as possible. To ensure that the same questions were asked in the same order of all the respondents, an interview schedule was used. In addition, the researcher was careful when clarifying answers and encouraging responses not to promote the researcher’s own views and used techniques such as pauses and neutral open-ended questions. The researcher was also careful not to overreact to the responses.

In addition to these measures, both the questionnaire and the interview schedule were pre-tested in a pilot study to overcome some of the possible shortcomings of each data-gathering instrument.

4.3. Pilot study

The questionnaire was piloted with a sample of five reference librarians in the Western Cape, one at each of the five tertiary educational institutions. As the questionnaire was to be completed by the heads or unit leaders of reference services, care was taken not to include them in the pilot study. The questionnaire was posted on the Internet at http://capewebdesign.co.za/library. The Web page also had a Microsoft Word version available for download. The five librarians were contacted by telephone and asked for their participation in the pilot, after which an e-mail with the Web site address was sent. The librarians were asked to respond within one week. Four of the five librarians responded.

The results were analysed and the questionnaire was modified in accordance with the responses in the pilot. Ambiguous questions were identified and rephrased. The numbering of the questionnaire was simplified and the sequence of the questions changed. The questionnaire was divided into sections, with an open-ended question at the end of each section inviting respondents to add anything further or add comments. The respondents could use these questions to qualify ambiguous questions. More options to the answers of the closed ended questions were added as a result of the responses in the pilot study.

Because of technical problems with downloading from the Web, the e-mail to the respondents in the actual study included an MS Word and plain text versions of the questionnaire as attachments, in addition to the URL of the Web version. The Web page also had an MS Word and plain text version available for downloading. The pilot of the questionnaire was conducted during October 2001. See appendix D for the pilot questionnaire in the different formats.

The interview schedule was also piloted during August and September 2001. A sample of five librarians was selected for the personal interviews. The sample consisted of one librarian from each of the five tertiary educational institutions in the Western Cape. The interviews lasted from 30 minutes to an hour fifteen minutes. At the end of the interviews, the

respondents were invited to add anything further to what they said in the interview via e-mail. Care was taken not to use the same librarians in the pilot of the questionnaire and the pilot of the personal interviews. See appendix E for the pilot interview schedule.

The results of interviews were analysed. Based on the results of the responses in the pilot of the interview, changes and additions were made to the list of questions on the interview schedule. The sequence of the questions was changed. The question numbering was simplified and two more questions were included. See appendix C for the modified interview schedule.

4.4. Conducting the Survey

4.4.1. Target population and sample

The target population for this research was the librarians working in reference services in the 36 higher education institutions in South Africa. However, most of the data, particularly the quantitative data required can be obtained from the librarian/s in charge of reference services or units of reference services at the higher education institutions. As there were only 36 higher education libraries there was no need to draw a sample of the population of librarians in charge of reference services or units of reference services in the libraries.

The researcher identified the most appropriate potential respondents and their contact details from the Web sites of their parent institution or the library. The potential respondents included reference librarian co-ordinators and team leaders, directors and deputy directors in charge of user services and branch and affiliated centre librarians.

In order to collect the more qualitative data, the personal interview was used. The sample for the reference librarians was drawn from the reference librarians in the Western Cape. The sample consisted of the librarians at the Cape Technikon Library (CTL) and the University of the Western Cape Libraries (UWCL). The sample was limited to the Western Cape because of the accessibility of these libraries to the researcher. The CTL was selected because it is an example of a technikon type library and a historically advantaged institution (HAI). There are seven reference librarians at the CTL. The UWCL was selected because it is a university

library and is a historically disadvantaged institution (HDI). There are eight reference librarians at the UWCL. In this way the researcher reached respondents representing both HDI and HAI libraries and both university and technikon libraries.

4.4.2. Administering the questionnaire

The questionnaire was distributed to a total of 92 persons, 21 at the 15 technikons and 73 at the 21 universities, using e-mail. As mentioned earlier, the questionnaire was posted on the Web at http://www.capewebdesign/library. The Web questionnaire page included an MS Word and plain text version that could be downloaded. The e-mail message to the potential respondents inviting them to participate included the URL of the Web version of the questionnaire and included the MS Word and plain text version as attachments. Appendix A contains the different versions of the questionnaire.

Respondents were given a two-week period to respond. The questionnaire was distributed in mid-November 2001 and respondents were asked to return the questionnaire by the end of November 2001. At the beginning of December those who had not returned a completed questionnaire were sent a reminder message and given another date by which to respond. Appendix B has examples of the messages included in the e-mail.

The questionnaire was divided into six sections. Each section dealt with a specific sub-area of the librarians' work. Five of the sections included an open-ended question at the end of the section giving respondents the opportunity to add anything further pertaining to the particular topic the sections dealt with. It also provided the respondents the opportunity to qualify questions they may have perceived as ambiguous. The rest of the questions were closed–ended, structured questions. According to Powell (1991: 87), the fixed response options takes less time to answer and thus discourages non-response. This format was chosen to increase the response rate by making it easier to complete the questionnaire. This format also increases reliability because there is less variation between tests (Powell, 1991: 88). The structured questions also facilitated the analysis of the questionnaire.

The questions in the questionnaire were mainly factual in nature. The first section dealt with general information regarding the size of the library, size of the student population and

number of librarians. The second section dealt with user access, use and training in the library. The third section dealt with the use of the Internet to answer reference queries, the length of time librarians have had access to the Internet and the training they have received on searching the Internet. Questions were also asked about reference queries received electronically and assistance given to users with using the Internet. The fourth section dealt with the library web site, and asked questions concerning the involvement of the reference librarians with the Web site. The fifth section with dealt other electronic resources that are available in South African higher education libraries. These questions yield the quantitative information on what electronic resources are available in South African higher education libraries and to what extent the Internet is used as a delivery vehicle for these databases in the libraries. The final section consisted of one open ended question. It was used to elicit the opinion and attitude of the librarians on the impact of the electronic resources on their work as reference librarians.

4.4.3. Personal Interviews

The second part of the study investigated the experiences of the reference librarians at CTL and UWCL, for qualitative data and detailed information to supplement the questionnaire. The directors of the two libraries were contacted to obtain permission to interview their librarians. The individual librarians were contacted and appointments were made with those who were willing to participate. At CTL five librarians participated and at UWCL three librarians were interviewed. A total of eight interviews were conducted with reference librarians at the CTL and UWCL. The interviews were held at the individual librarians' library in a private room. The interview was recorded on tape recorder and lasted from thirty minutes to one hour thirty minutes. The interviews were conducted during November 2001. At the beginning of each interview the researcher thanked the librarian for his/her participation, introduced the research topic and explained the purpose of conducting the interviews, as well as giving an approximate duration of the interview. At the end of each interview the researcher thanked and invited the participant to add anything further to what they said in the interview via e-mail.

The questions on the interview schedule were aimed at collecting more detailed data on the impact of the Internet on the day-to-day work of the reference librarians, and to ask more

complex questions that could not be posed in a questionnaire. The interviews were used to elicit information on the experience of reference librarians and user instruction, expectations and needs. Appendix C contains the interview schedule. Mainly open-ended or unstructured questions were asked. These questions were used to encourage free responses from the librarians interviewed.

The first set of questions and sub-questions were asked to create a framework for the researcher and librarian interviewed. The next questions, from question three to six, dealt with the possible ways in which the reference librarian could be using the Internet and the extent to which it is used. Question seven and eleven dealt with perceived changes in user and staff behaviour based on the experience and interaction of the reference librarians with users. Questions eight to ten dealt with librarian and Internet training as well as the librarians' confidence level in searching the Internet. The next questions were asked to elicit the attitude of librarians toward the Internet and asked questions about the advantages and disadvantages of Internet access to users and reference librarians. Finally the last questions dealt with librarians' opinion on the impact of the Internet on reference librarianship and the Internet as an information tool.

4.5. Summary

This chapter has dealt with the methodology that was used to investigate the research questions of this study; the data-collection techniques employed to obtain the data and described how those techniques were applied to conduct the survey. It has shown that the research survey methodology was the most appropriate methodology because it can collect contemporary data from a dispersed target population. The self-administered questionnaire and personal interview used together makes it possible to collect both qualitative and quantitative information. These characteristics made these two instruments ideally suited to collect the relevant data to answer the research questions of this study.

Chapter 5

Findings of the survey

5.1. Introduction

This chapter deals with the results of the survey. It will present the responses to the questions in the order that it appeared on the questionnaire, with the aid of graphs.

5.2. Response to questionnaire

The questionnaire was distributed to a total of 92 librarians using electronic mail. These included heads and unit leaders in reference services and vice-directors and directors of libraries. The total of 92 was constituted of 21 potential respondents at the 15 technikons and 71 at the 21 universities. A total of 12 questionnaires were returned after the initial two-week period that respondents were asked to respond by. Another 14 were returned after the reminder message asking the respondents to return within one week. A final total of 26 questionnaires were returned via electronic mail, fax or submission from the Web. Two members of the sample population, one from a technikon and one from a university, could not be reached by e-mail despite using the most recent contact e-mail addresses. Further investigation to discover the contact details, during the period that the survey was conducted, proved fruitless. These two were thus excluded from the survey. This yielded a response rate of 28.9% from 90 potential respondents.

The responses were composed of 17 university and eight technikon library respondents. Another questionnaire was returned without sufficient information to determine from which institution it came. It was possible to have more than one response from an individual institution. The following figures represent the response for individual institutions: 11 universities were represented, of a potential of 20 universities; and eight of a total of 14 technikons were represented. Thus, the response represented 19 institutions (or 20 if the response of the unidentified institution is included) of the possible 36 institutions in South Africa. This yielded a response rate of 52.8% (or 55.6%) from individual academic institutions.

Figure 5.1 is a presentation of the discussion above in a table format.

Response type	Universities	Technikons	Unidentified Instit.	Total	Response Rate
Respondents	17	8	1	26	28.9%
Institutions	11	8	1	19 (20)	55.9% (58.8%)

Figure 5.1. Questionnaire response

There are many benefits in using electronic surveys, like the low cost, speed and quality of the response. However, several studies have found the response rates of electronic surveys are lower than traditional mail surveys (Shannon & Bradshaw, 2002; Cook, Heath & Thompson, 2000; Sheehan & McMillan, 1999; Schaefer & Dillman, 1998). Cook, Heath and Thompson (2000: 826-829) found in a meta analysis of 49 electronic surveys, an average response rate of 39.6%, much lower than that reported for mail surveys of 40-50%. Sheehan and McMillan (1999: 46-47) found in their analysis of eight studies a response rate low of 6% and a high of 75%.

Cook, Heath and Thompson (2000: 831-2) have found a positive relationship between follow up notices, personalised e-mails, pre-contact and salience of the issues and an increase in response rate. The results suggest that sending follow up notices after the questionnaire has been sent, contacting the potential respondent before sending the questionnaire and sending a personalized message to the individual respondent increases the response rate. The results also suggest that the more salient a topic is to the potential respondents the more likely they are to respond.

In this study the researcher sent a reminder notice after a two-week period. The topic of the questionnaire was the Internet, which is a pertinent topic in the library environment and therefore salient to the potential respondents. The e-mail communication was personalised as the message included the names of the respondents in the greeting. However, this could have been improved upon. At larger institutions, typically universities, where a number of individuals were included the researcher sent one message to all of them, mentioning all the names in the greeting and listing all the e-mail addresses, of course.

5.3. Findings of the questionnaire

The questionnaire was divided between six sections. Appendix A contains the questionnaire in all the formats in which it was distributed. The first section, section A, of the questionnaire dealt with general information. Section B dealt with the library users' use and access to the Internet. Section C dealt with the librarians' use of the Internet and section D with the library web site. Section E dealt with the databases and section F was an open-ended question.

5.3.1. Library characteristics

The second question on the questionnaire asked for the number of user terminals in the library. Figure 5.2 shows the responses.

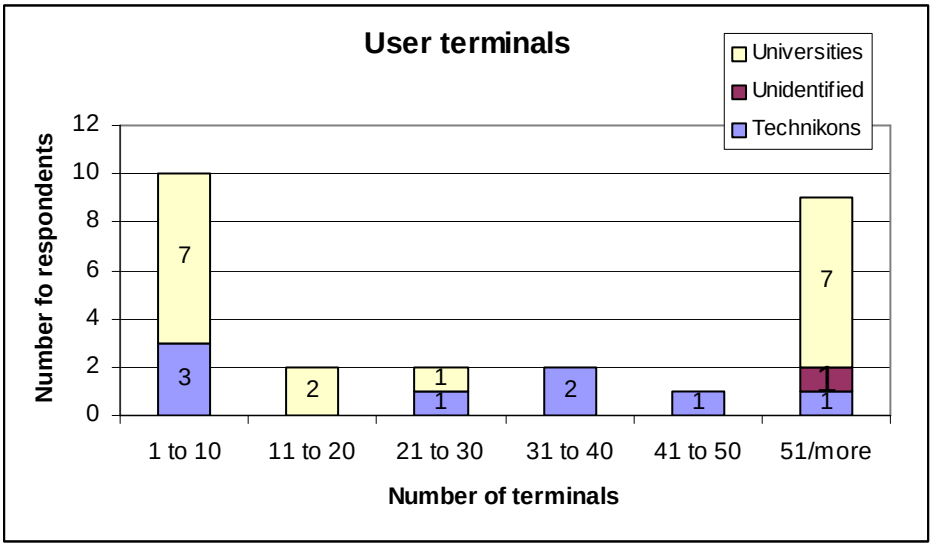


Figure 5.2. User terminals

Of the 26 responses, ten (38.5%) indicated that there were one to ten user terminals in the library, nine (34.6%) indicated there were 51 or more user terminals and two (7.7%) indicated there were 11 to 20, 21 to 30 and 31 to 50 user terminals in the library, respectively. Finally one (3.8%) indicated there were 41 to 50 user terminals in the library.

The third question asked the number of branches that the library's service consisted of. The majority, sixteen, indicated that they had two to five libraries or branches. Four (15.4%) indicated there were only one and six to ten libraries or branches, respectively. Finally, one (3.8%) indicated there were 16 to 20 and 21 or more libraries or branches, respectively.

In response to question four, the responses indicated that 12 (46.2%) provided a service to 10 000 to 19 999 full time equivalent students (FTE) and nine (34.6%) provided a service to 5000 to 9999. Four (15.4%) provided a service to fewer than 5000 and one (3.8%) provided a service to 30 000 or more.

In question five, the respondents were asked to indicate the number of reference librarians in their library service. Figure 5.3 illustrates the responses.

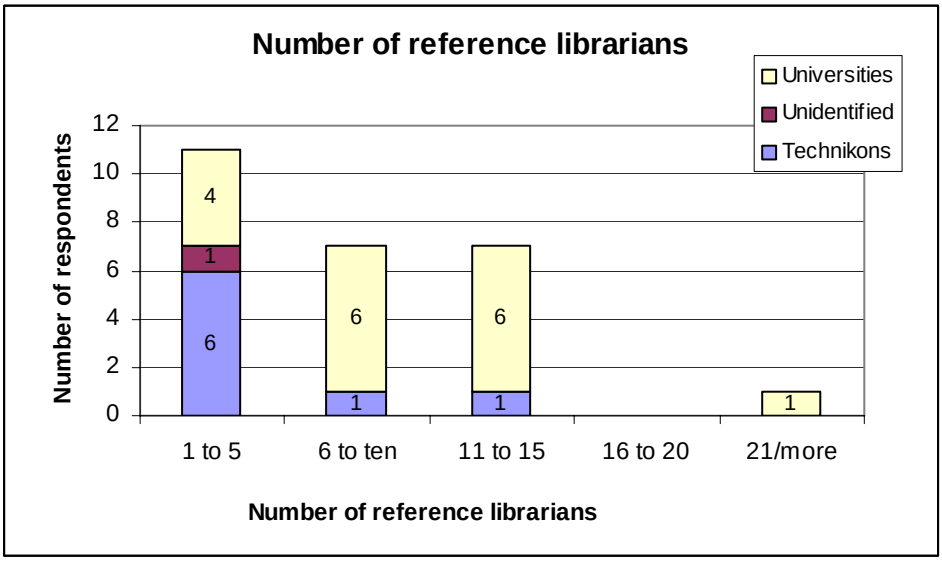


Figure 5.3. Number of reference librarians in a library

Eleven (42.3%) of the respondents indicated there were one to five reference librarians in their library service. Seven (26.9%) indicated there were six to ten and 11 to 15 reference librarians, respectively. One (3.8%) indicated there were 21 or more reference librarians in their library service.

5.3.2. User Internet use and training

Section B of the questionnaire dealt with the library users use of and training on the Internet.

Question six asked the respondents to indicate whether the library users have access to the Internet in their library and to indicate how the users have access. All but one the 26 respondents provided Internet access. Of the 25 libraries that provided Internet access the majority provided access by a combination of the options provided. Eighteen (30.5%) provided access via librarians, 16 (27.1%) provided access via dedicated terminals, 14

(23.7%) provided access via OPACs and only 11 (18.6%) provided access in computer rooms in the library.

Question seven asked respondents to indicate who has access to the Internet in their library and whether they have free access or pay access. Figure 5.4 illustrates the figures.

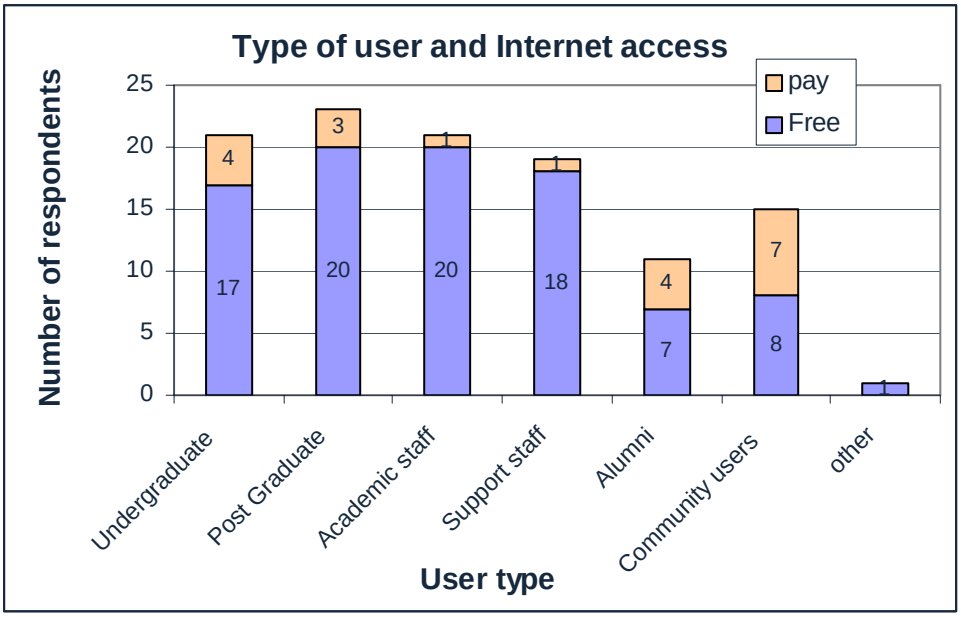


Figure 5.4. Type of user and Internet access

The majority of the 25 libraries only offered Internet access to their primary user population, namely students and staff, and this access tended to be free. Only 15 respondents indicated that they provided access to community and only 11 provided access to alumni. Twenty-three (92%) libraries provided access to graduate students, twenty-one (84%) provided Internet access to undergraduate students and academics in the library, respectively and 19 (76%) provided free access to support staff.

Question eight asked the respondents to indicate the number of user terminals that offer Internet access in their library. The majority, 13 (52%), of the 25 libraries, indicated there were one to ten user terminals providing Internet access in the library. Six (24%) had 11 to 20 and three (12%) had 51 or more user terminals that provided Internet access. One (4%) of the 25 libraries had 21 to 30, 31 to 40 and 41 to 50 user terminals that provided Internet access, respectively.

Figure 5.5 compares the responses to questions two and eight.

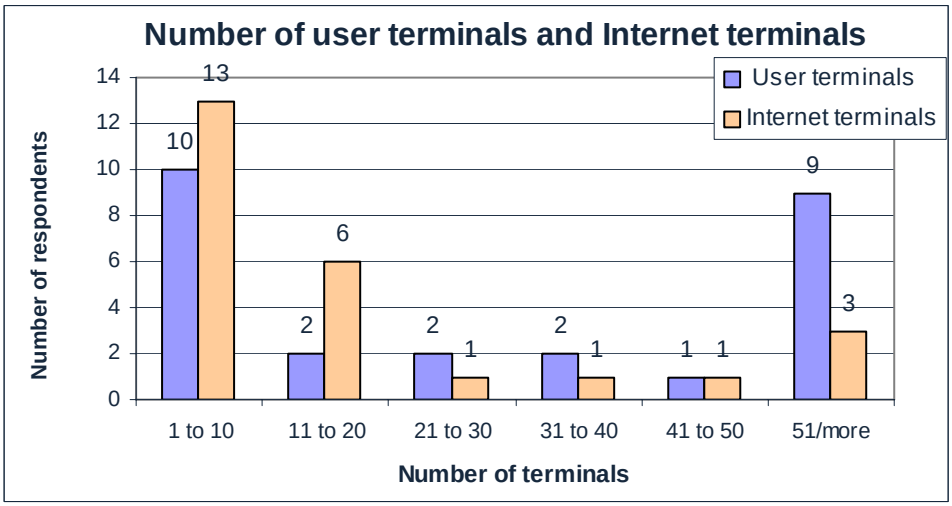


Figure 5.5. Number of user and Internet terminals

The number of user terminals with Internet access in the library was generally less than the total number of user terminals available in the library. This indicates that not all the user terminals in the 25 libraries offered Internet access. In fact 13 (52%) of the 25 who responded provided Internet access from all their user terminals/workstations.

Question nine asked whether the user terminals were mostly clustered together or decentralised or dispersed throughout the library. The responses did not indicate a clear trend toward either. Thirteen (52%) indicated the user terminals were mostly clustered together and 12 (48%) indicated the user terminals were dispersed.

Question ten asked whether Internet instruction is offered to on-site users. Respondents were also asked to indicate the way in which instruction is given. Figure 5.6 illustrates the figures.

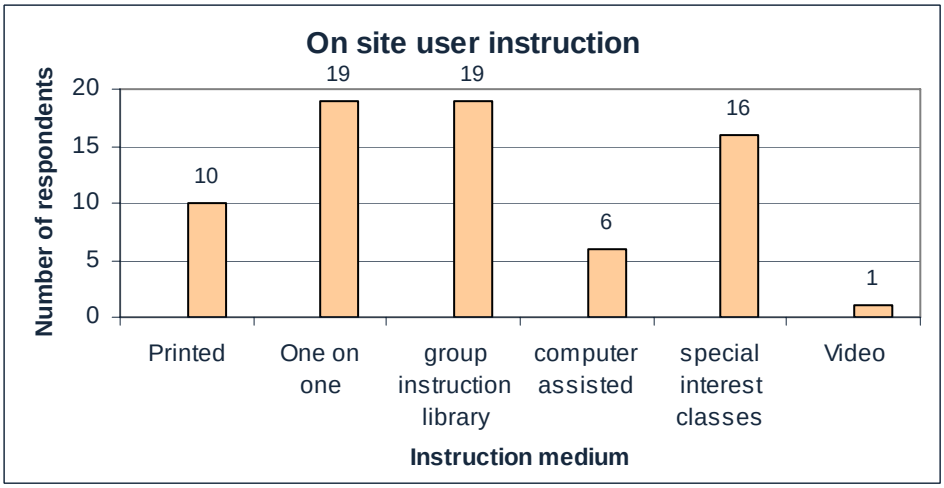


Figure 5.6. Internet instruction to on-site user

All but three of the 25 libraries offered training on the Internet to on-site users. These 22 (88%) provided mostly one-on-one and group instruction as part of general library instruction. Nineteen (86.3%) of the 22 libraries provided one-on-one instruction and group instruction as part of the library instruction. Special interest classes followed these with 16 (73%) offered Internet instruction as special interest classes, ten (45.5%) provided printed guides on the Internet and six (27.3%) used computer-assisted instruction and only one provided video instruction.

Question eleven asked whether Internet instruction is offered to remote users. The majority 15 (60%) of the 25 libraries provided Internet instruction to remote users. Only ten (40%) of the 25 libraries offered Internet instruction to their remote users. Figure 5.7 illustrates the figures indicating the way in which the 40% offered instruction.

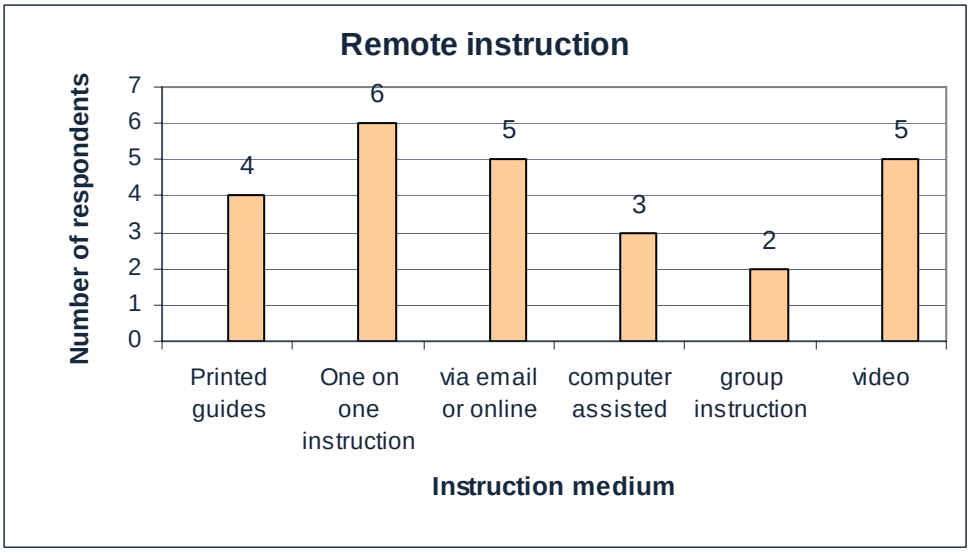


Figure 5.7. Internet instruction to remote users.

Of the ten (40%) libraries that offered instruction to remote users, six provided instruction on a one-on-one basis. Half (five) did the instruction via e-mail or online, four (40%) used printed guides, three (30%) used computer-assisted instruction, five offered video instruction and only two (20%) provided special interest classes.

Question twelve asked whether students are able to download information from the Internet and what download facilities users have in the library. In all but two of the 25 libraries users could download information. In 21 of the remaining 23 libraries, users could save to a disc, in 19 users could print, in two users could send the information to an e-mail address and in only one users could download the information via the librarians only.

Question thirteen asked how long users had been able to access the Internet in the library. Figure 5.8 illustrates the figures from the responses.

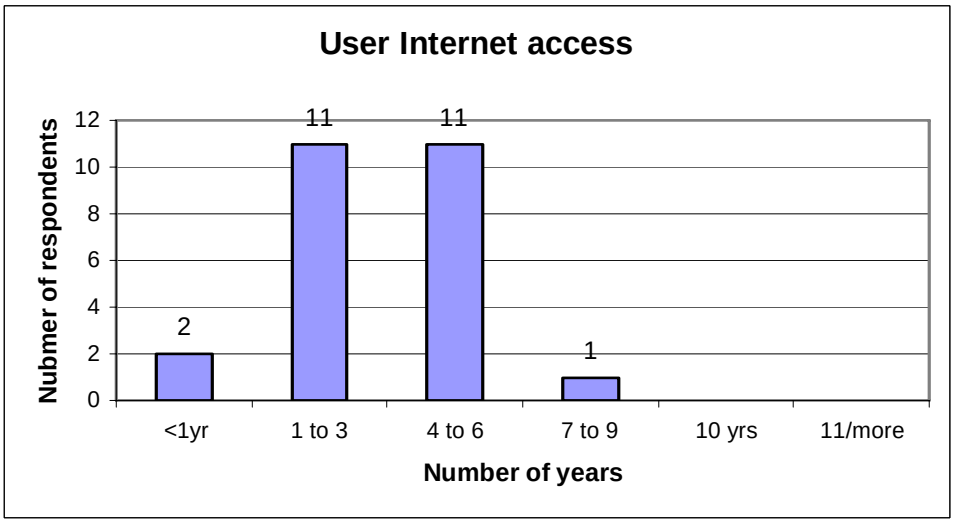


Figure 5.8. Period of User Internet access

Of the 25 libraries that offered Internet access, 11 (44%) had provided access to users for one to three years, and four to six years, respectively. Two (8%) had provided access for less than a year and one (4%) had provided access for 7 to 9 years.

Question fourteen was an open-ended question inviting further comments about user Internet access, use and training. This question was aimed at giving the respondents an opportunity to add anything pertinent that the previous questions in the section did not allow them. A total of nine respondents chose to comment further. Three respondents explained that limited or no access of the Internet to students was due to insufficient facilities. Consequently, students had access to the Internet via the librarians in the library. Four respondents indicated that Internet access was aimed at accessing online subscription databases and e-journals. Training on the Internet was, therefore, focused on the databases.

The responses indicated a high demand for Internet facilities, but scarce resources plagued libraries. An alarming comment by one of the respondents was that, “It is difficult to influence or motivate such a [Internet] service to university management when they don’t see the need for the university to provide Internet access for the students”.

However, two respondents reported that new facilities would be in operation during 2002 providing computer and Internet facilities. Funding for both was coming from the European

Union/Department of Education Library programme. However, staff members had access in their offices and training for staff was done on a one-to-one basis.

One respondent reported that while some user terminals provided "open Internet access, others are dedicated for use of Web-based online databases". This quotation supports the results to question eight. The results indicated that there were generally fewer Internet access points than user terminals.

Another two comments referred to the usage of the Internet by users. The responses indicated that students were using the Internet for non-academic purposes such as personal communication and pornography. While users were using Internet for non-academic uses, they were preventing others from using it for research purposes. In addition they were using up bandwidth preventing staff from doing their work. To this end, one of the respondents was limiting the use of the Internet by providing separate workstations for undergraduates and graduates. The graduates only had thirty-minute sessions on the Internet workstation at a time.

5.3.3. Reference Librarians' Internet Use

Section C of the questionnaire dealt with librarians' use of the Internet.

Question fifteen asked how long the reference librarians have had access to the Internet. Figure 5.9 illustrates the figures.

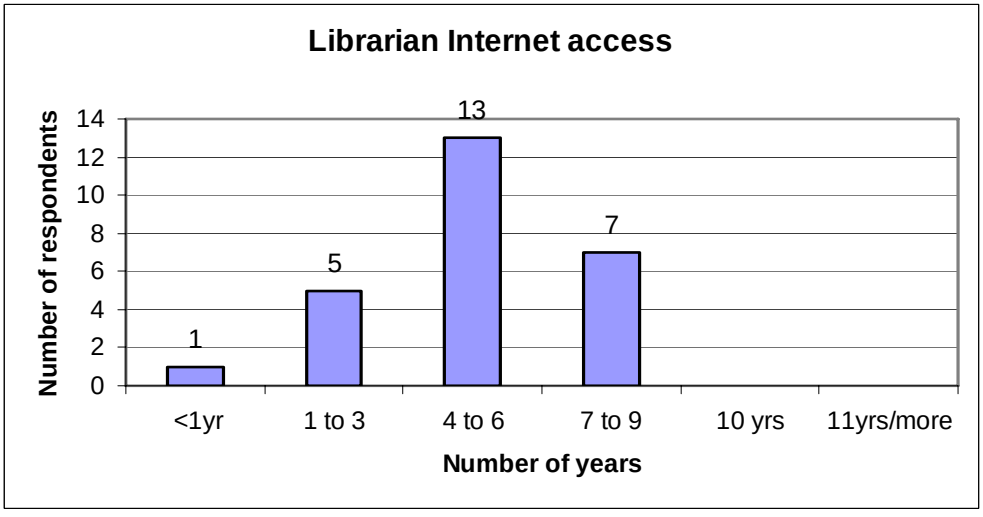


Figure 5.9. Period of Reference librarians Internet access

All reference librarians reported having access to the Internet. Half (13) of the 26 respondents indicated that librarians have had access to the Internet between four to six years, seven (26.9%) have had access between seven to nine years and five (19.2%) have had access to between one to three years. Only one (3.8) had access to the Internet for less than a year.

If one compares the length of access to the Internet between reference librarians and users, it seems that generally the reference librarians had access before access was given to users. Figure 5.10 illustrates the figures.

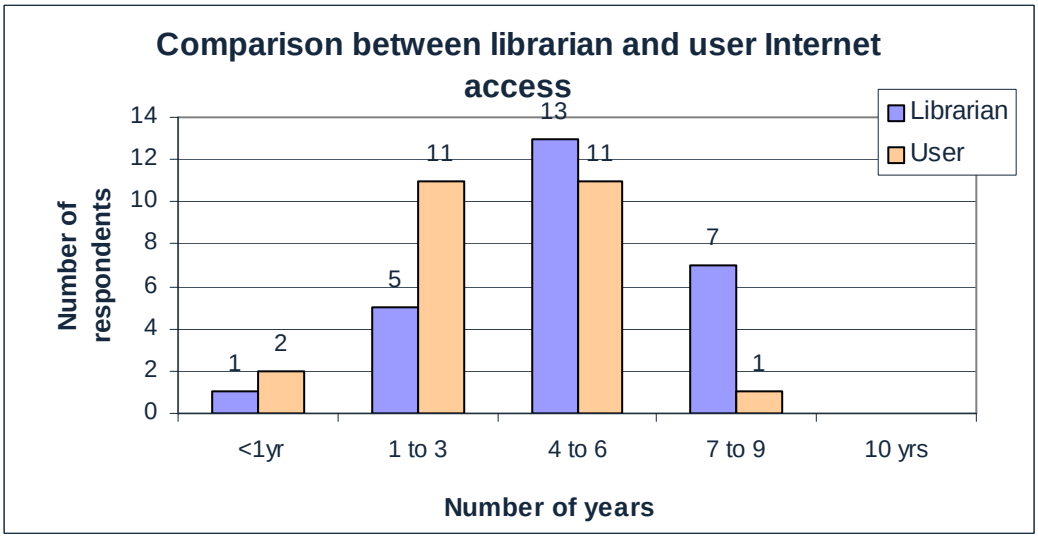


Figure 5.10. Comparison between user and reference librarians Internet access

Question sixteen asked whether the reference librarians used the Internet to answer reference queries and how they used it. All respondents indicated that the reference librarians used the Internet to answer reference queries. Twenty-four (92.3%) respondents indicated that the Internet was used for on-site ready reference, seven (76.9%) used it for queries received via e-mail and one (3.8%) used the Internet for literature searches. Two (8%) respondents did not indicate how they used the Internet to answer reference queries.

Question seventeen and eighteen asked how many reference e-mail reference queries do the reference librarians receive and answer per day. Figure 5.11 illustrates the figures.

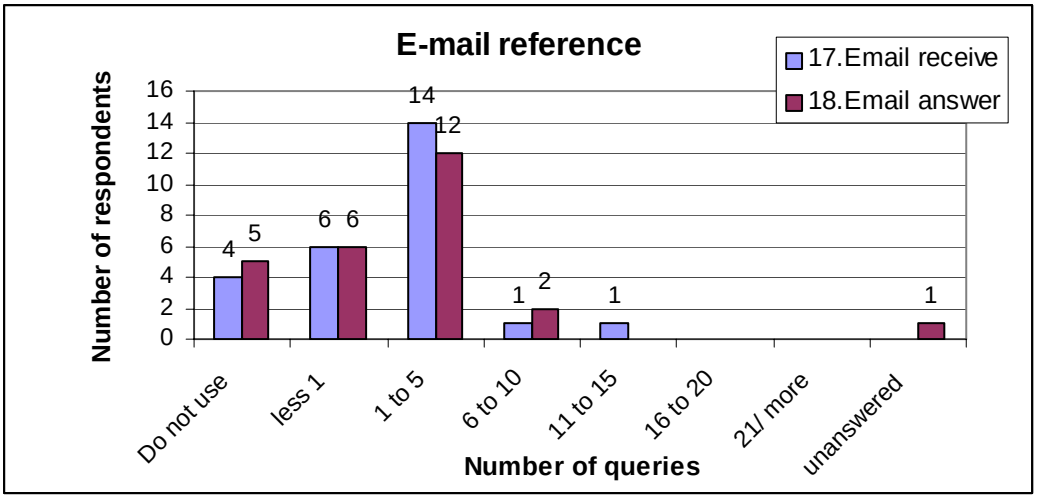


Figure 5.11. Email reference queries received and answered daily

Four respondents did not receive e-mail queries. A little more than half (14) respondents received one to five queries, six (23.1%) received less than one query per day. One respondent received six to ten and one received 11 to 15 e-mail queries. Twelve (46.2%) indicated answering one to five e-mail reference queries. Five (19.2%) respondents did not use e-mail to answer reference queries. Six (23.1%) answered e-mail reference queries less than once per day and two (7.7%) answered six to ten reference queries via email per day.

Figure 5.12 illustrates the responses to questions nineteen and twenty.

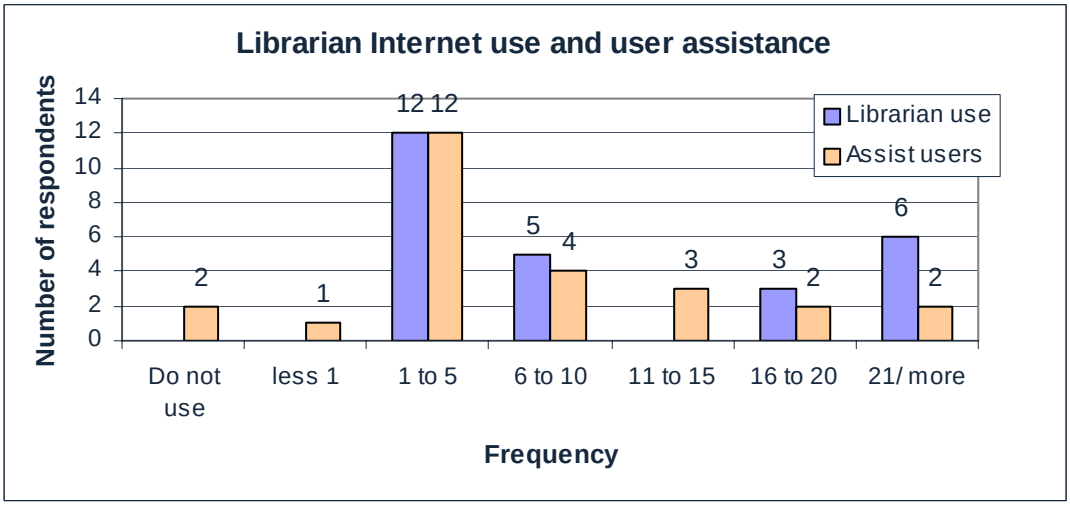


Figure 5.12. Librarian Internet use and assistance to users

Questions nineteen asked how often the reference librarians used the Internet excluding the OPAC and subscription databases. Fewer than half (12 of 26) indicated that the reference librarians used the Internet for reference queries one to five times on a daily basis. Six (23.1%) used the Internet 21 or more times daily. Five (19.2%) used the Internet for reference queries six to ten times and three (11.5%) used the Internet 16 to 20 times daily.

Question twenty asked how many users asked for assistance with using the Internet excluding Web OPAC and subscription databases. This question was aimed at finding out to what extent helping users with the Internet impacts on the daily work of the reference librarians. Twelve (46.2%) indicated that users asked for assistance one to five times per day. Four (15.4%) indicated that users asked for help six to ten times and three (11.5%) indicated that users asked for help 11 to 15 times daily. Two (7.7 %) indicated that users asked for help 16 to 20 and two indicated 21 or more times daily. Two (7.7%) indicated that the users did not ask for assistance with the Internet. Finally, one (3.8%) indicated that users asked for assistance with the Internet less than once daily.

Question 21 asked what sort of training the reference librarians received on the Internet excluding the Web OPAC and subscription databases. The responses indicated various combinations of formal workshops and learning from colleagues and self–taught efforts. The majority, 22 (84.6%), attended formal workshops. Nineteen (73.1%) were self-taught, 15 (57.7%) learned from colleagues and finally one (3.8%) learned using user guides.

Question twenty-two was an open-ended question inviting further comments on the reference librarians' use of and training on the Internet. Six of the 26 respondents chose to comment. One reported that they were intending to offer Internet training to all first year students in 2002. Another respondent reported that although the parent institution offered Internet courses, s/he had not yet taken the course. One respondent complained about the Internet response time being slower later in the day.

Two respondents commented on the reference librarians' use of the Internet. One reported that the library did not have student access to the Internet, and the librarians did all Internet searches for students, "which is incredibly time-consuming". The other respondent reported that the reference librarians found they had to update the knowledge and skills for advanced

searching on the Internet, that the Internet was used increasingly for literature searches in addition to database searches, and that they were using it for collection development. Lastly, one respondent commented that users believed that the Internet could satisfy all their information needs and need training to use it effectively and to evaluate the information found on the Internet.

5.3.4. Library Web Site

Section D of the questionnaire dealt with the library Web site.

Figure 5.13 illustrates the results from the 26 responses to questions twenty-three to twenty–seven of this section.

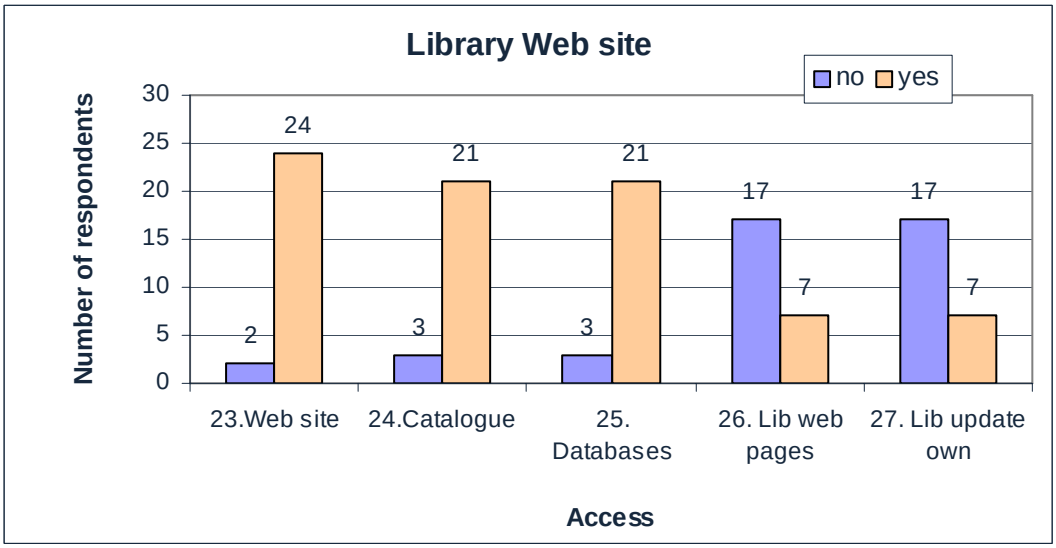


Figure 5.13. Library Web site

All but two of the 26 respondents have a library Web site. Twenty-one (87.5%) of the 24 respondents provided access to their library catalogue and online databases from the library Web site. The majority, 17 (70.8%), of the respondents indicated that the reference librarians did not have individual Web pages, and only seven (29.2 %) indicated that they had individual pages. Seven (29.2%) indicated the reference librarians updated their own pages.

The respondents indicated that the reference librarians updated their pages on a monthly, quarterly and semester basis. Three respondents indicated that reference librarians updated on a monthly basis; one spending less than an hour, another spending one to five hours and a third spending 21 or more hours updating their pages. Of the respondents who indicated updates on a quarterly basis two indicated reference librarians spent one to five hours updating and one indicated reference librarians spent six to ten hours updating. One respondent indicated that reference librarians updated on a semester basis and spend six to ten hours updating.

Question twenty-nine asked whether the library's web site generated reference queries. Just more than half (13) of the 24 respondents indicated the library Web site generated queries. Five indicated the Web site generated one to five to 5 per day, four indicated less than one query per day and two indicated 11 to 15 per day. Two (15.4%) indicated that they did not collect such data.

Question thirty to thirty-three aimed at finding out to what extent reference librarians were involved in the design, maintenance and updating of the library Web site. The three questions asked who designed, maintained and updated the Web site, respectively. The responses to the three questions indicated that teams, consisting of two and more members, did the work. The members included a combination of library and campus IT staff. The library staff involved included subject librarians, library IT (e.g. Systems librarian), library assistants, training librarians, deputy directors and in one case even the library director. Six (25%) of the 24 respondents indicated that the reference librarians were involved in the design and maintenance of the Web site. Five (20.8%) indicated campus IT and four (16.7%) indicated library technical staff involvement in the design of the Web site. One respondent reported that the Library Web committee designed and maintained the Web site, without indicating the

composition of the committee. Seven (29.1%) indicated that the campus IT maintained or was involved in the maintenance of the library Web site.

Question thirty-three asked how often the library Web site was updated. Nine (37.5%) respondents indicated that the Web site is updated "irregularly" or "as often as needed". Five (20.8%) indicated that Web site was updated on a weekly basis, three (12.5%) indicated monthly and three indicated semester basis. Two (7.7%) indicated that the Web site was updated fortnightly and one (4.2%) indicated once a term. One respondent (4.2%) did not answer the question.

Question thirty-four was an open-ended question that asked for further comments about the library Web site. Of the 26 respondents, eight (30.8%) chose to comment. Two respondents reported that their Library Web site was being developed and would be operational in 2002. Two respondents reported that the library Web site was being redesigned and would be re-launched 2002. Another reported that the Web site was privately hosted and was being transferred to the parent institution's site. The site was privately hosted because of the problems with bandwidth experienced with the institutional site. One respondent reported that a Library Systems Administrator would be appointed in 2002, and the duties would include updating of the library Web site. One respondent reported that a survey done on the institutional Web site indicated that users are satisfied, found their way easily and located the information they were looking for.

Finally, one respondent reported that the Library Web master was responsible for the design and maintenance of the site in liaison with the institutional Web master and public relations department. Each section of the library was responsible for updating the information pertaining to their section and supplied the information to the Library Web Master. They needed an expensive Web content management programme to continue to maintain the site and concluded by stating that "There is increasingly higher level of web design skills and web programming skills needed to maintain [an] extensive Web page – ordinary html-skills are not enough anymore".

5.3.5. Online Subscription Databases

Section E dealt with the online databases in libraries, and includes question thirty-five to question forty-two.

Question thirty-five asked respondents to indicate which online subscription databases the library provided access to and the ways in which they were accessed. Figure 5.14. illustrates the results.

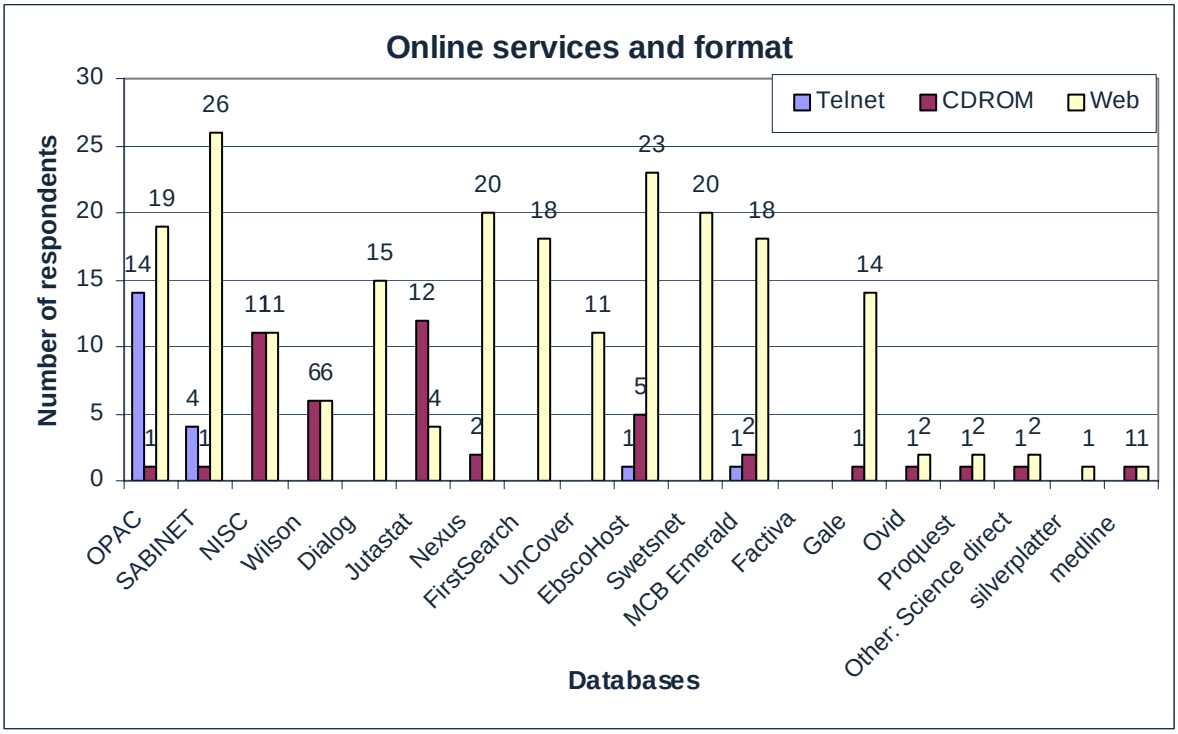


Figure 5.14. Online subscription databases

Figure 5.14. shows that Web access to all the databases, including the OPAC was the dominant way in which access was provided to databases, in some cases Web access was the only access to the database. The one exception was Jutastat, with the CD-ROM being the preferred access format.

Question thirty-six asked respondents to indicate which of the online databases users searched themselves as end-users and which the librarians searched as intermediaries. Figure 5. 15. shows the figures.

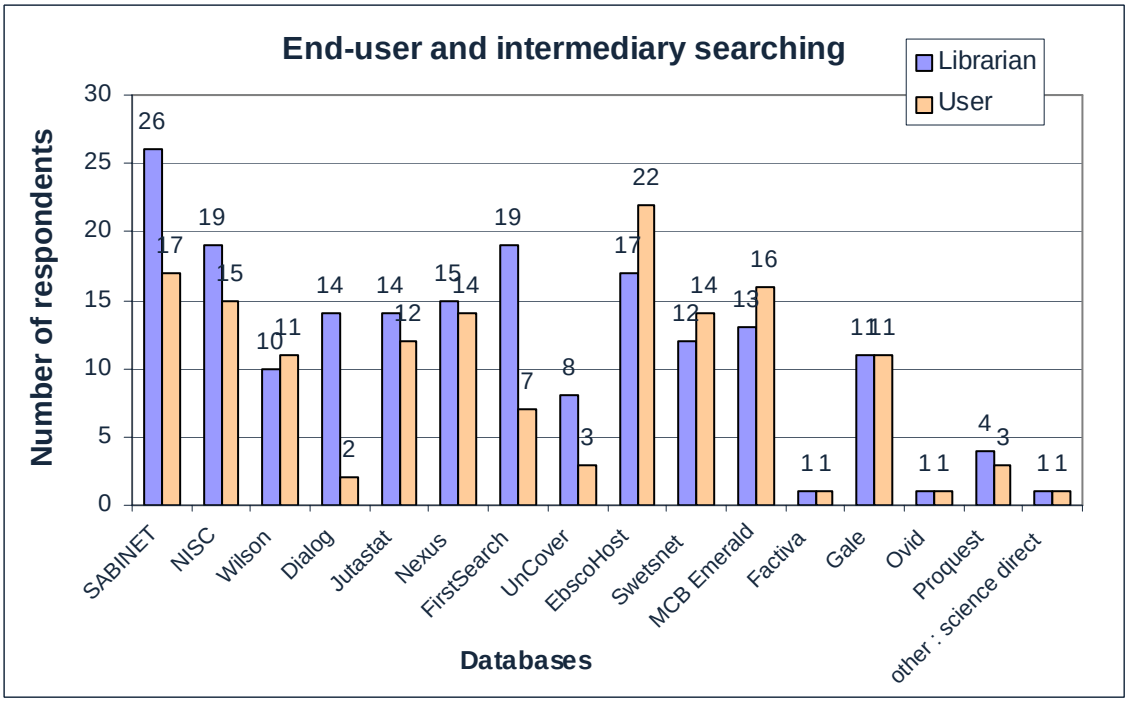


Figure 5.15. End-user and intermediary searching

From the results it appears that libraries offer both intermediary and end-user searching to their users. All of the respondents to this question intermediary searching for SABINET, followed by FirstSearch and NISC with 19 (73%). Twenty–two (84.6%) of the respondents indicated end-user searching on Ebscohost, followed by Emerald with 18 (76.2) and Swetsnet with 12 (60%).

Figure 5.16. shows the responses to questions thirty-seven to thirty-nine.

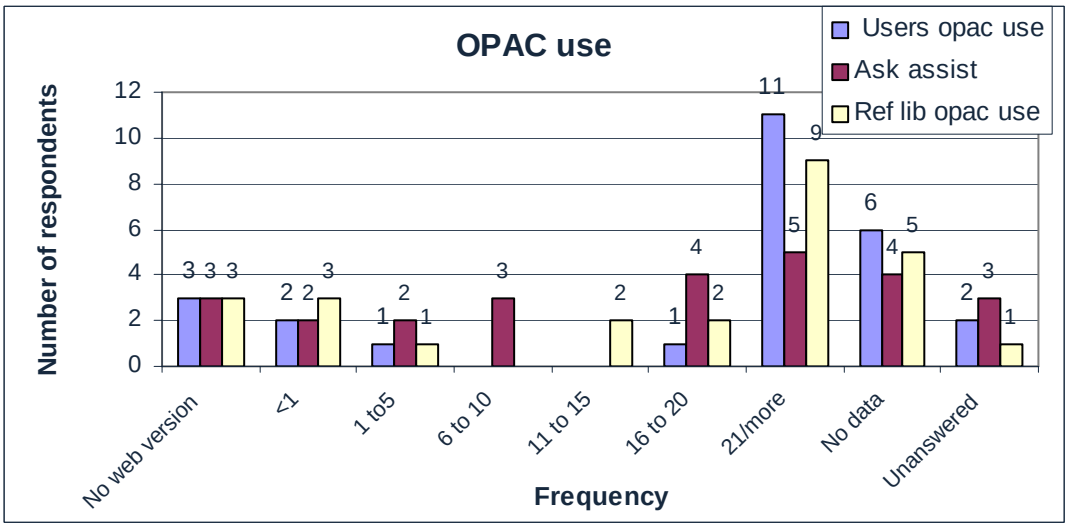


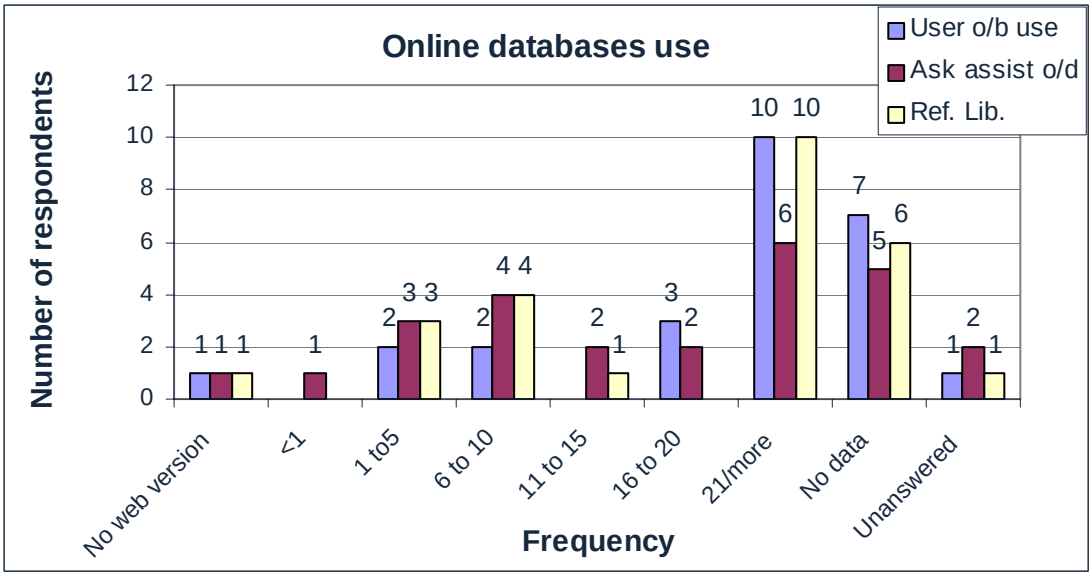
Figure 5.16. OPAC use

Question thirty–seven asked respondents how often users accessed the Web version of the OPAC on a daily basis. Twenty three (88.5%) indicated the library had a Web OPAC. Eleven (47.8%) indicated that users accessed the Web OPAC 21 or more times, two (8.7%) indicated less than once daily, one (4.4%) indicated one to five and 16 to 20 times daily, respectively.

Question thirty-eight asked how many users asked for assistance with using the OPAC daily. Of the 23 (88.5%) that had Web OPACs, five (21.7%) indicated that users asked for assistance 21 or more times, four (17.4%) indicated 16 to 20 times per day, three (13.1%) indicated six to ten times daily, and two (8.7%) indicated less than one and one to five times daily, respectively.

Question thirty-nine asked how often the librarians access the Web version of the OPAC daily. Of the 23 that had a Web OPAC, nine (39.1%) indicated reference librarians using the Web OPAC 21 or more times daily, three (13.1%) that indicated less than once per day, two (8.7%) indicated 11 to 15 and 16 to 20 times per day, respectively. One (4.4%) indicated one to five times a day.

Figure 5.17. shows the responses to questions forty to forty three.



5.17. Online database use

Question forty asked how often the users accessed the Web version of the online databases daily. Of the 26 respondents, only one (3.9%) indicated no Web access to online databases, seven (28%) indicated that no data was collected and one (4%) did not answer the question. Of the 25 that had Web accessed, ten (40%) indicated that users accessed the Web online databases 21 or more times a day and three (12%) indicated that users accessed the online databases 16 to 20 times a day. Two (8%) indicated users used the Web databases one to five and six to ten times daily, respectively.

Question forty-one asked how often users asked for assistance with using the online databases on a daily basis. Of the 25, six (24%) indicated that users asked for assistance 21 or more times and 16% indicated users asking for assistance 6 to 10 times per day, and 12% indicated 1 to 5 times a day. Two (8%) indicated that users asked for assistance 11 to 15, 16 to 20 times per day, respectively. One (4%) indicated that users asked for assistance less than once daily.

Question forty-two asked how often the reference librarians access the Web version of the online databases on a daily basis. Of the 25, ten (40%) indicated that librarians accessed the Web online databases 21 or more times per day, and four (16%) indicated that reference librarians accessed the online databases 6 to 10 times per day, three (12%) indicated one to five times daily, and one (4%) indicated 11 to 15 times per day.

Question forty-three was an open question and asked respondents for further comments on the online databases, their access and use. Of the 26 respondents, eight (30.8%) commented. Four respondents commented on the library OPAC. Two respondents noted that the Web OPAC had just been installed and one that the Web version would soon be installed. Another commented that they had experienced major problems with the OPAC. One respondent commented that although no record was kept of users' use of online databases, s/he was sure that users used them and that the system records the number of hits. Four respondents commented on intermediation by reference librarians. Two commented that the reference librarians acted as intermediaries. One reported that reference librarians assisted the users with online searches and the other that the reference librarians did the searches on behalf of the students. The latter indicated that this was due to insufficient equipment for users. However, this would change in 2002 as the institution would be receiving equipment from

overseas donors. The other two respondents described their situation in which users had access to online databases directly. One of the respondents reported that Library users had access to all online databases, CD-ROMs and the Internet in a workroom in the library. The other respondent reported from the context of a distance education institution library and explained that although the users had direct access to the online databases from the library Web site, they found it difficult to select the correct database without the help of a reference librarian. The respondent also pointed out some difficulties in providing access to distance education students on the Internet. The slow response time in South Africa, the variety of formats and interfaces were problematic for users and the changes in database interfaces led to more and unending training of users.

5.3.6. Impact on Reference librarians

Section F consisted only of one open-ended question. Respondents were asked to comment on how the use of electronic reference resources had changed over the past three to six years and how the job of the reference librarians had changed with particular emphasis on the impact of the Internet on reference, user instruction and other electronic tools. Twenty of the 26 respondents commented on this question.

5.3.6.1. Changes in the library

Five of the 20 who responded to this question noted that the library, its services or the job of the reference librarians had changed drastically since the Internet and electronic resources in their library.

One respondent reported that changes in the past three to six years included moving to a Web based OPAC system, acquiring and using full text online databases, the use of e-mail to answer reference queries and the launch of the Web site. The Internet was used much more than previously. Similarly, another respondent reported that during the past three to six years, the library had moved from a “paper reference library” to an “online library”, and further noted that the information age is a fast moving era and libraries needed to go online in order to keep up with change. However, one respondent reported that although they had free Internet access via their OPAC, due to technical problems they could no longer provide the access. Another respondent reported that their users would have direct access to the online

databases and electronic resources only as from 2002. One respondent reported that their database use was low because students relied very heavily on what was prescribed by lecturers and were not encouraged to use online databases by the lecturers.

5.3.6.2. End-user vs Intermediary searching

One respondent reported that because of the high level of computer literacy amongst some of their students as well as the recent emphasis on research with the introduction of B.Tech, Masters and doctoral qualifications at technikon level, more students access national and international databases on their own. This has resulted in less of a reliance on the librarian as intermediary and immense increase in user education and training on the Internet and electronic databases. Consequently, they were planning to establish an electronic classroom to facilitate the training that was needed.

Another respondent referred to the independence of their users as a result of information literacy courses being offered by the reference librarians. Another respondent reported from the context of a distance education institution that the library used to be an intermediate service only. However, users could choose to ask the assistance of a reference librarian or do the searches themselves as they had access to the same databases as the reference librarians. Another respondent reported that the users are more involved in their own searches.

5.3.6.3. Increased expectation

The former respondent also noted that the increase in full-text material available to the users has led to expectations that all full text was easy to find and available on the Internet. Reference librarians have to ensure that users understand that not everything they need was available online and that some material was only available in print format. Users sometimes found it difficult to distinguish between print and electronic holdings and to negotiate the electronic and print information environment. Users also needed a variety of skills in order to use the databases. They need to be computer literate, have advanced Internet searching skills and be abled to evaluate the Internet resources. End-user databases had also led to an increase in interlibrary loans as users had access to more referenced articles and books. However, a large percentage of the library users had no Internet access and consequently, dd not have access to the online databases. For those with access, the users had additional costs associated

with the use of the databases. They had to upgrade their computers regularly and they also needed faster Internet access. This they had to do at their own cost as distance students. In addition, the user, as a distance education student, also carries the cost of printing the full text articles. However, another respondent noted that users selected more precisely what they needed and were aware of their needs when they had to pay for access and paper. The former respondent noted that there was growing concern that the high prices of electronic databases and the poor value of the rand would make access to quality databases out of the reach of most libraries, and therefore also students, in South Africa.

5.3.6.4. Use of Internet and online resouces

One respondent reported that the Internet had changed the way reference librarians approach a query. In the past they started with reference works, books and then CD-ROMs. However, with the introduction of the Internet reference librarians started with Web OPAC, online databases and the Internet. The challenge for the reference librarian was to "know which of these sources is most suitable for answering queries". One respondent reported that because of the number of online databases, the library staff, academics and students relied very heavily on the Internet. Similarly, another reported that the reference librarians relied on the Internet for full text journals and the focus was on electronic rather than printed journals. Another respondent reported that the subscription to some print journals have been stopped because of user preference for e-journals. Two respondents reported that users preferred electronic sources to print sources. However, one respondent reported that for some of their users books were still an important source of information, while for others the electronic databases were well used.

Two respondents reported that full text online databases were extremely helpful, more up to date and the information was faster available to the end-user from the time it had been written. Another reported that reference librarians used fewer printed reference sources and "user-friendly subject related reference tools on the Web have become an integral part of the reference section of the library". One respondent reported that although the most relevant databases were still the most important starting point, to ensure quality information to the user, all databases were searched. In addition, the Internet as a source of information was part of almost every search that the reference librarian searched.

Two respondents noted that reference librarians were forced to stay one step ahead of the users and they should learn to be critical and evaluate resources. Another reported that because their institutions was still young, the staff and service were still developing and growing. Staff had adapted quickly because they were more familiar with electronic information retrieval than any other method. Similarly, another reported that since their subject librarian unit had only been formed in mid 1996, making it less than 6 years old, they could not comment on any changes, but expected to see changes when users have direct access to the Internet for the first time during 2002. However, the respondents did report that the subject librarians had all developed Subject Based Information Gateways (SBIGs) on the library home page. Another reported that the electronic databases had made it possible for librarians to satisfy information needs timeously. This is important as user expectations had increased as one respondent noted, the users wanted the latest information immediately and they wanted it in full text. They were no longer willing to wait for information and the Internet and online databases could satisfy these needs. Similarly, another respondents reported that the service was now faster and more efficient and that reference searches were broader and better. One respondent reported that the increase in online databases had also increased the level and volume of support and advice reference librarians had to give. Similarly, another respondent added that assistance to users had increasingly become one-to-one.

5.3.6.5. User instruction

However, another reported that they trained their users "properly the first time around." Consequently they become independent of the reference librarian who would then not receive many queries.

Six respondents reported that end-user training was offered on an ongoing basis and formed a greater part of the reference librarian's workload. One described the impact of the Internet on user training as "phenomenal". Consequently, teaching, training and presentation skills are now needed as an integral part of the work of the reference librarian. The same respondent predicted that the "Librarian as educator, trainer, teacher and facilitator of lifelong learning will become ever more important for the information professional".

Similarly, another noted that the job of the reference librarian had changed “dramatically”. The new work of the reference librarians included a greater emphasis on training, information management, and e-mail reference. These required new competencies described as knowledge, skills and attitudes, which librarians should be given an opportunity to develop. The respondent concluded by stating “If reference librarians are proactive, they can give the image of librarianship a boost with the wonderful help of the Internet. They must not see the Internet as a threat, but as a vehicle that can support and deliver wonderful service to users”.

5.4. Summary

This chapter presented the findings of the survey. The figures were presented in the graphs and also expressed as percentages in the text. The results show that all the libraries had Internet access and all but one provided user Internet access. The majority of the libraries did not provide Internet access at all the user terminals/workstations. Internet instruction to users tends to be provided on an individual basis at the point-of-use. Most librarians had attended formal Internet training. Electronic reference, in the form of e-mail and Web site generated queries, did not appear to be an important part of reference services yet. The majority of libraries had a library Web site and provided Web OPAC and Web online databases from the library Web site. Few reference librarians had and were involved in designing and updating their Web pages. Most libraries offered both end-user and intermediary searching. However, librarians reported that there was less of a need for intermediary searching, but users needed guidance when selecting appropriate databases and more individual point-of-use instruction because of the number of databases available.

Chapter 6

Findings of the Survey: Interviews

6.1. Introduction

This chapter presents the findings of the interviews conducted with the reference librarians at the Cape Technikon Library Services (CTL) and the University of the Western Cape Library Services (UWCL). A total of eight reference librarians were interviewed. The questions posed in the interviews can be divided into six basic areas, including Internet access, usage, training benefit and problems, and the impact of the Internet on reference librarians and users. The interview schedule is in appendix C.

6.2. Interviews

The results of the questionnaire were mostly quantitative in nature. Therefore the interviews were conducted to collect qualitative data that would provide insight and depth to the results. The CTL was selected because it is a technikon library and a HAI and UWCL was selected because it is a university library and a HDI.

6.2.1. Cape Technikon Library Services

The CTL had ten reference librarians in total: five subject librarians and two information librarians who provided an after hours information service at the main campus library, and three branch librarians. The branch librarians did not have access to the Internet and subscription databases via the Web at the time the data was collected. Five librarians were interviewed at the main campus library.

The main campus library is situated on two levels of the Administration building, with the collection and subject and information librarians situated on the first level and the library entrance on the second level. The CTL has no central reference desk on the main campus library. Each librarian was directly accessible to the users as their work areas were strategically located throughout the first level of the main campus library.

6.2.2. University of the Western Cape Library Service

The UWCL had nine reference librarians. All of them were assigned specific subject areas and were referred to as faculty librarians. The UWCL includes one branch library. The librarians at UWCL had participated in another study just prior to the commencement of this study. Consequently only three faculty librarians agreed to participate in this study. These librarians were interviewed at the main campus library.

The main campus library occupied a building on its own that consisted of 14 levels. The library collection was spread over ten levels, from level five to level 14. UWCL has a central reference desk on the 6th floor. The faculty librarians also had offices on this floor, but each worked three hours a day at the reference desk.

6.3. Internet access

The librarians at the CTL have had access to the Internet from the mid 1990's. The students have had access from 1999. Nineteen out of 39 student terminals/workstations, which were located throughout the main campus library provided Internet access, with 14 providing only Internet access. The others provided access to the library OPAC, CD-ROMs, online subscription databases and the Internet. CTL, although providing Internet access, did not provide facilities for downloading information from the Internet, neither by printing nor saving to a disk. Students had Internet accounts that are sold at 30 mega bytes at a time, and have access to the Internet in the library using their accounts.

Not all of the library's online subscription databases were directly available to the users. The users could only access the full text databases and expensive online databases, which is billed at a per search rate, via the librarians. In other words, librarians searched these databases as intermediaries.

At the UWCL the librarians have had Internet access for 10 years. Initially access was on Gopher with FTP file downloads and users had access from this time as well via the librarians. When the online databases became available via the Web in the mid 1990's, users had direct access to these databases. There are four user terminals/workstations that are centralised at the reference desk.

At UWCL the user terminals/workstations defaulted to the Library Web site's search page, which provided access to the online subscription databases, including the Web OPAC. Links to other Web resources were provided, for example newspapers. While users could access the open Web from these user terminals/workstations, they did not have direct access to the open Web. Thus, users had free, but closely guided access to the Internet. Users paid only for pages printed. Users were referred to other computer laboratories on campus when they wanted to use search engines or surf the Internet. Thus, the students used the Internet mainly to access the Web online subscription databases.

Sixty user terminals/workstations had been donated to UWCL to be installed during the course of 2002. One librarian speculated that the user Internet policy would probably change then, as there would be many more terminals/workstations available for student use.

6.4. Internet Usage

6.4.1.Student Internet usage

All the interviewees reported that the Internet was used for academic rather than recreational purposes. However, the librarians did observe that users used the Internet access for e-mail, at both libraries, and to visit specific Web sites for entertainment purposes at CTL.

Figure 6.1. below, illustrates the observed student Internet use by the reference librarians interviewed.

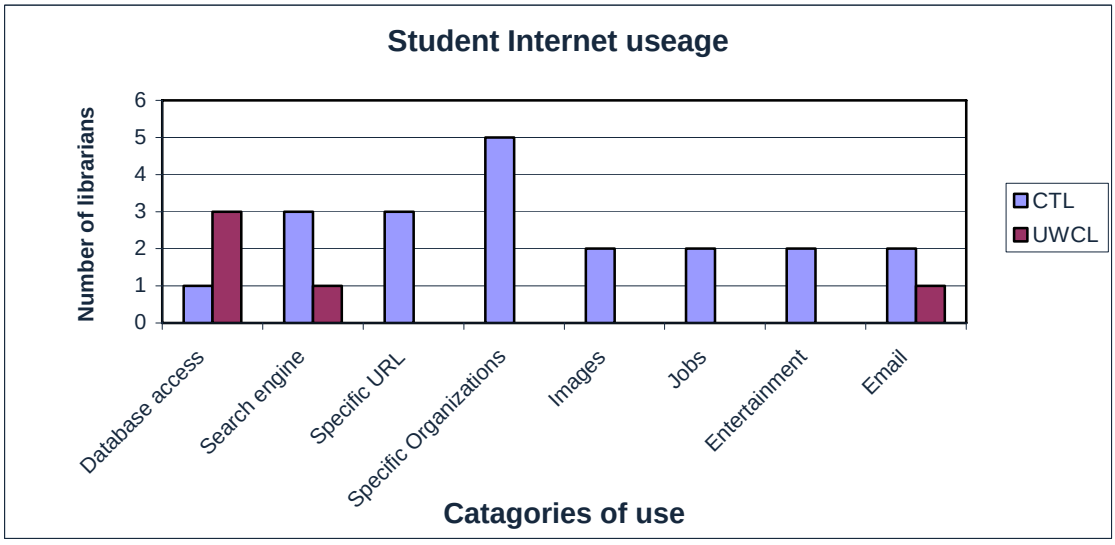


Figure 6.1. Student Internet Use

All the interviewees at UWCL reported that students used the Internet for database access. This is reasonable considering their current policy, as explained earlier. The low use of the Internet for search engine searches and e-mail access was also logical considering the policy at UWCL.

While most of the online databases at CTL were also available via the Web, including the catalogue, only one librarian of the five interviewed indicated student Internet use for database access. This may be explained by the following remark from one of the librarians at CTL: "If I use the databases I don't think of it as using the Internet. It [the Internet] is just a platform." Consequently, if the librarians did not think of database use as Internet use, they would not note student online database use as Internet use.

6.4.2. Reference Librarian Internet usage

Figure 6.2. illustrates librarian Internet use at the two libraries.

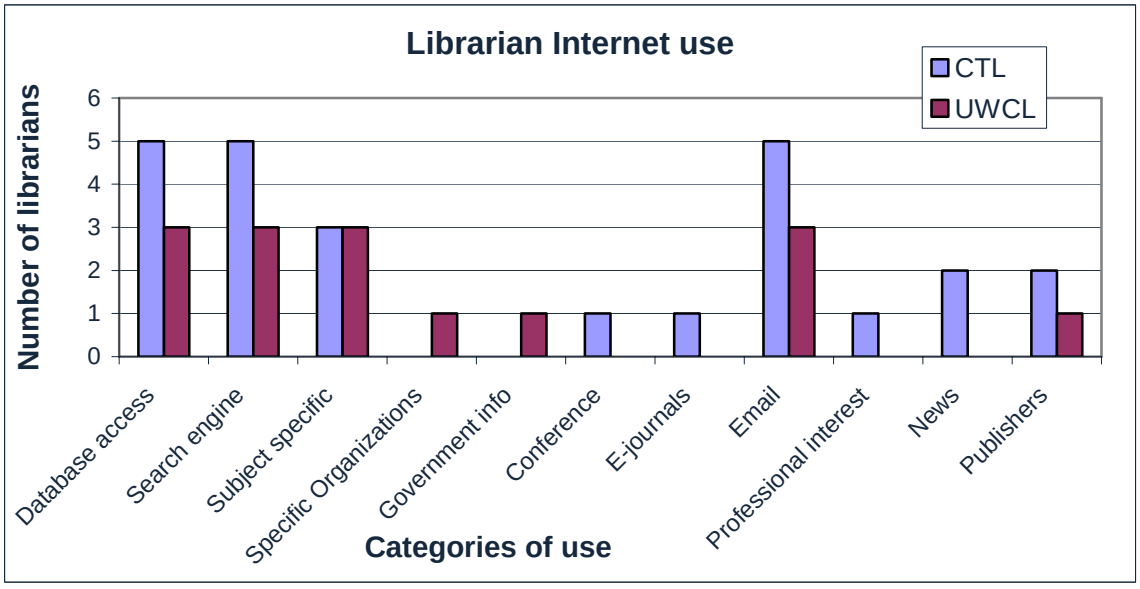


Figure 6.2. Librarian Internet use

At both libraries the librarians used the Internet mostly for e-mail and access to Web-based databases and search engine searches. All the interviewees at UWCL and three at CTL indicated that they would first use the online databases and would use the open Web only as a last resort. One librarian at CTL indicated that s/he would use the open Web very much as

part of the search process. However, all of the interviewees also indicated that the information needed to answer a query would determine the tool and resource used, whether it was the Internet or not. All of interviewees at UWCL and three at CTL, were building a list of subject specific URLs. One at UWCL and two at CTL would use these to add to the Library Web site to become SBIGs.

While all the interviewees used e-mail as a communication tool, as one would a telephone, it was used only marginally as an electronic reference service and frequency of use differed widely. It was used to send information and search results to academics, distance education, part-time and post-graduate students. The frequency varied from three times daily to twice a week to once a month, to once a year.

Both libraries had a Web site. However, the CTL had an extensive Web site that was only available on the Intranet of the Cape Technikon. It was on the latter that the two librarians mentioned earlier would add their list of subject specific URLs. At both libraries the reference librarians were only involved or consulted in the initial design of the Library Web site and currently only gave feedback on errors or when asked to give feedback when something new is added. Therefore, apart from the interviewees who spent time on the building up of the SBIGs, the interviewees did not spend a significant amount of time developing or maintaining the Library Web site at both libraries.

6.5. Internet training and instruction

6.5.1. Reference Librarian Training

Neither of the two libraries had an Internet training program for the library staff. CTL had an Internet program for the Cape Technikon staff, and the library staff had to request Internet training via the Human Resources Training Department. All of the librarians interviewed received training from outside organizations such as the Cape Library Co-operative (CALICO). All of them also reported receiving training on e-mail software and online databases. The open Web training included search engine and gateways, and only the interviewees from CTL had Web design training.

Two (25%) of librarians reported that the Internet training were too theoretical and could have been improved by a more practical overview of what is available on the Internet. For example, what is free and what is authoritative, what are good sites and bad sites and why. Three (37.5%) of the interviewees considered the Internet training they received as introductory. The training they received was from one to two years after they had been granted access and already knew how to search. All of the librarians reported having been self-taught in how to use the Internet and acquiring the skills from colleagues, by reading and actual use, either in response to a query or exploring on their own.

All but one (7 or 87.5%) of the interviewees reported that they had confidence in their Internet searching ability. However, all of them reported that they could use the Internet to answer reference queries effectively. Half (four) of the interviewees however, added that as the Internet is constantly developing one should always be open to learning and developing one's knowledge and skill further.

6.5.2. User Internet instruction

UWCL did not have a formal standard programme for Internet instruction for students. All the interviewees at UWCL (3 or 37.5%) reported that they included basic Internet instruction when doing instruction on the Web OPAC and online databases. This would include brief introduction to a search engine searching, providing URL references to good sites. The emphasis was, however, on the databases and OPAC. All the librarians reported also providing Internet instruction as the need arose at the point-of-use on an individual basis.

CTL offered a formal training programme on the Internet. However, only two (25%) of the interviewees offered Internet training and they would do it only on request. The training included a definition of the Internet, how URL's are constructed, search engines, refining a search, finding a word on a Web site, selecting and e-mailing information and examples of good and bad sites. Two (25%) introduced the Internet when doing training on the OPAC and online database instruction. Both invited users to come back for further, individual training on the Internet. Their reasons for doing so were divergent. One interviewee did not see a need to give group training, as the Internet was included in an End-User Computing course that her students had to take. The other worked mainly in the evening and her students use the Internet at work and would have specific needs, which could be better addressed in a

customized Internet session. For example, users would want to know how to retrieve better search results or use a specific search engine.

6.6. Benefits and problems with providing Internet access in the Library

6.6.1. Internet benefits

Figure 6.3. illustrates the benefits of Internet access in the library as identified by the interviewees.

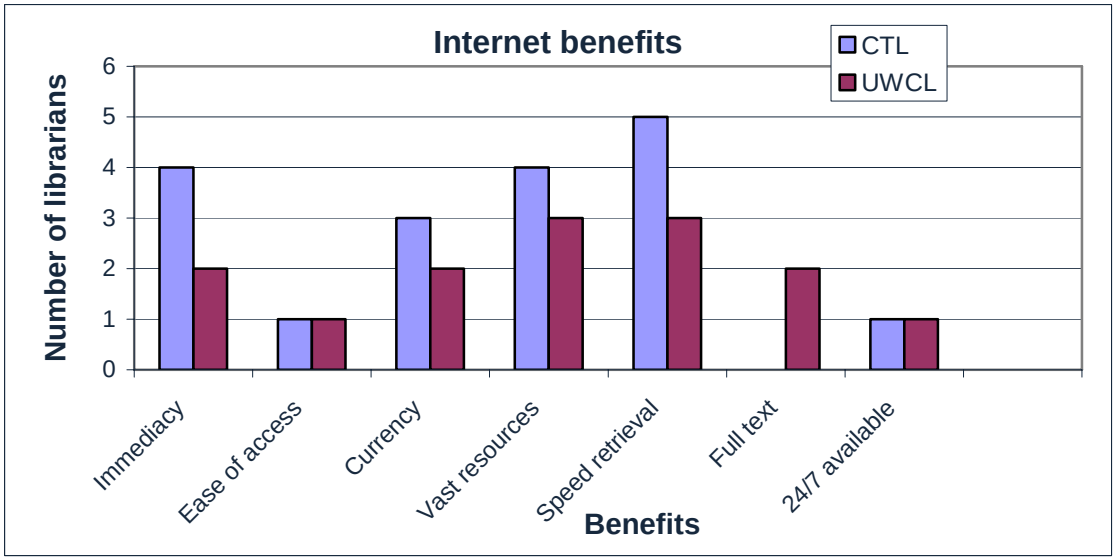


Figure 6.3. Internet Benefits

All of the librarians identified the speed of the information retrieval on the Internet as a benefit. Seven (87.5%) of the interviewees identified the vastness of the resources on the Internet, that there is more information available to support and do research on, as a benefit. The interviewees valued having the information literally at one's fingertips, and that users no longer had to wait to get the actual information. Six (75%) identified immediacy of access to information as a benefit. The interviewees appreciated the almost zero time lapsed between time of publication and being able to access the information on the Internet. Five (63%) indicated the currency of the information found on the Internet as a benefit as opposed to printed information. Other benefits identified were ease of access, which referred to anybody being able to search on the Internet, the capability of the Internet to deliver full text documents, and the availability of the Internet 24 hours a day, seven days a week.

6.6.2. Internet problems

Figure 6.4. illustrates the problems identified by the interviewees with Internet access in the library.

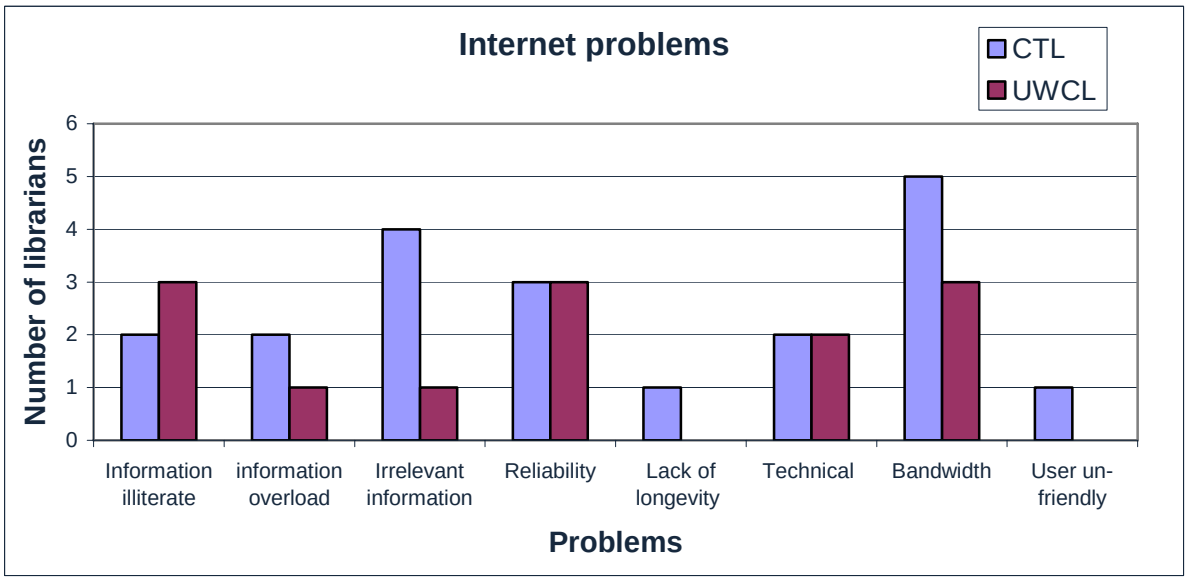


Figure 6.4. Internet problems

All of the interviewees reported that the slow download speed resulting from poor bandwidth was a problem with Internet access in the library. Five of the interviewees found retrieving irrelevant information when doing a search on the search engines to be a problem. A librarian from CTL added that this is due to the search engines doing a word for word search. Another added that search engines should function like the search functions of online databases. Six (75%) identified the reliability and authority of the source as a problem. Five (62.5%) indicated that the lack of information literacy amongst users who could understand their assignment, formulate a search strategy, use the search engines effectively and evaluate the results and the sources, as a problem that was exacerbated with Internet. Other problems identified included technical problems with access in the library, information overload where users and librarians are flooded with information, the lack of longevity of the source where some information found on the Internet cannot be found again because it no longer exists on the Internet, and finally one librarian said the Internet is user-unfriendly.

6.7. Internet impact on reference librarians

Figure 6.5. illustrates the contribution of the Internet to reference librarians' work and reference librarianship, as identified by the interviewees.

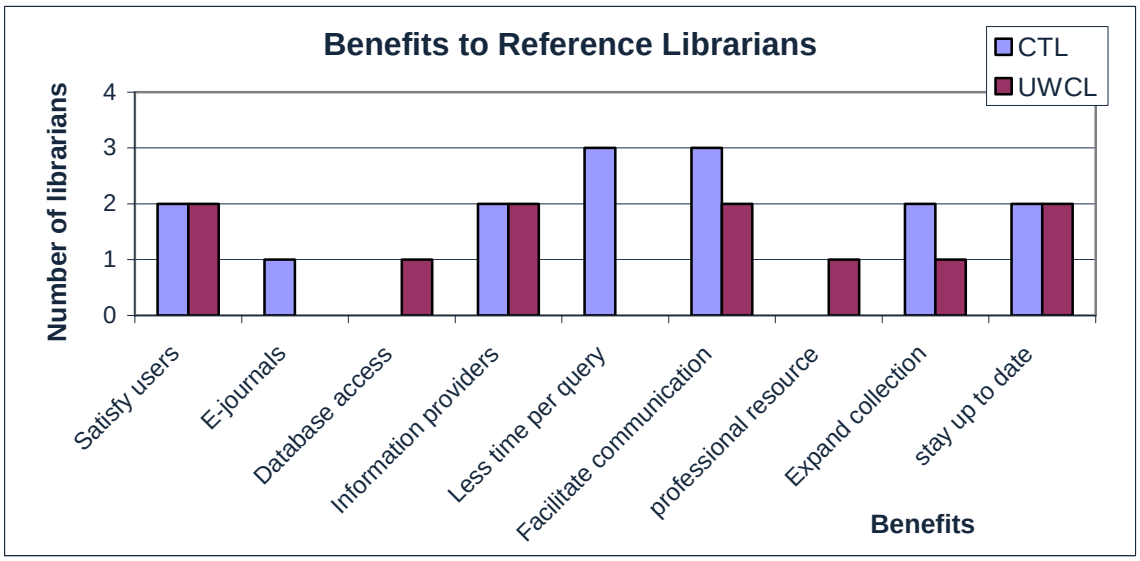


Figure 6.5. Benefits for Librarians

Five (62.5%) librarians said the Internet has broken down geographical and time barriers to communication. It has made the world smaller and allowed reference librarians to communicate with colleagues globally and contribute internationally. Half (four) of the interviewees said that the Internet helped them to satisfy user needs because the Internet enabled them to supply and meet the demand for information, in a variety of formats. The visible satisfaction of the users increased their job satisfaction. Half (four) of the interviewees said that the Internet increased the ability of the reference librarian to fulfil his/her role as information providers because of the vast amount of information and wider access that the Internet afforded. It also provided the possibility of providing the service electronically. Half of the librarians said the Internet allowed librarians to expand the limited library collections by providing access to current information on any topic. Other benefits identified are: online database access and electronic journals access that the Internet has made possible, one of the interviewees indicated that one can now spend less time to answer a query, and one thought it was an empowerment tool, particularly professionally.

A problem experienced by the reference librarians in particular, as identified by half (four) of the interviewees, is the Internet's constant development, which makes it difficult to stay up to date on the changes whilst one has a busy working life.

Half (four) thought that the Internet revitalized reference librarianship, one thought it a threat and three (37.5%) thought it was both. Amongst the reasons given by those who thought the Internet revitalized it were:

- Although users could access the information themselves, the proliferation of information would increase the need for librarians to act as intermediaries,
- It changed the job of the reference librarians and they have had to learn information technology skills,
- It involves adapting to a new way of information delivery and a mind set change that values information access rather than ownership,
- It forced librarians to stay up to date with technological advancement.

One added, that although it has revitalized librarianship, "we are not doing what we should be doing with it yet, compared to what our colleagues are doing overseas. We are straddling a basic [information] world and an advanced world".

Those who thought the Internet a threat did so for the same reasons the others thought the Internet revitalized reference librarianship. They believed that because the Internet is convenient and easy to use, and users could do the searches themselves, reference librarians would become obsolete. Similarly, those who thought it did both, mentioned the same reasons, and argued for both from the two perspectives. One librarian added, "You are challenged to stay up to date. Whether you do is up to you".

Three (37.5%) of the interviewees would advise other librarians to train both staff and users to search effectively on the Internet, before it is introduced in the library. Librarians should explore, by way of their counterparts in other libraries and the Internet itself, subject specific resources available on the Internet. Three (37.5%) of the interviewees would also ensure that there were sufficient facilities available, including printing facilities. Two (25%) of the interviewees would monitor the use of the Internet by users, so that certain sites would be inaccessible.

All the interviewees thought that the Internet was a “wonderful thing”, and one described it as a “phenomenon”. However, half (four) added that it was an effective tool only if searched appropriately. Another added that it is a “most frustrating” tool and that there should be a differentiation between academic and commercial Internet as the Internet2 initiative is aiming toward.

6.8. Changes as a result of the Internet

6.8.1. Users search behaviour

Six (75%), i.e. four (50%) at CTL and two (25%) at UWCL, of the interviewees thought that the users’ search behaviour had changed. The interviewees thought that users had been forced to change their search behaviour because the database search facilities are more advanced, they had to become more involved in their search and they preferred to do the searches themselves. They would go to the open Web first before going to the databases and print sources. Their research behaviour had changed because they could access the information in full text more quickly and easily and they could finish their research projects sooner. They became “addicted to the databases, sometimes more so than to the open web. Students were not addicted to doing research before the Internet.” Two, one librarian at each of the two institutions, thought users search behaviour had not changed. The format had changed but the search process still remained the same.

All the interviewees reported that they have not noticed any change in the interaction between the user and the reference librarians. One of the librarians reported that the number of interactions had increased, although not the number of queries. All of the interviewees reported that user demands and expectations had increased. Half (four) had noticed an increase in the preference for online full text information over printed indexes and books. Users came to the library more readily because they expected to be helped and to find online information, they expected to get results much faster, they knew the information was available and expected to get the information immediately, not wanting to wait. Two (25%) of the librarians noted that some of the users expected the librarians to do the search for them and deliver the information in their hands.

6.8.2. Reference Librarian search behaviour

Three (37.5%) of the interviewees said they could not say whether the Internet had changed the librarians search behaviour because the Internet had been introduced in the library before they started working as reference librarians and could thus not compare. One of these added, “You cannot think of your work without it [Internet]. I can’t imagine work without it”. The other one said that s/he first would search the online databases before going to the open Web and that searching the Web was very much a part of the search process. The third of these interviewees said that with the introduction of the online databases on the Internet, s/he had become more involved in the users search process. These three librarians are fairly young and are librarians at CTL.

Of the remaining five (62.5%) of the interviewees, one librarian thought that the Internet had no impact on their search behaviour, while four librarians thought their search behaviour had changed. Some of the ways in which it had changed was:

- Less time is spent on a query,
- Because the databases on the Internet had made the search a lot faster, one is forced to think faster and clarify and change search strategies and terminology faster,
- There were more resources available, and more sources of information, which had to be incorporated into the search process.

6.8.3. Change in library culture

Five (75%) of the interviewees had not noticed any emotional, attitudinal or cultural change amongst library users. Only three (37.5%), two at CTL and one at UWCL, had noticed a change. One librarian noticed that users were more confident and did not want help from the reference librarians. The second interviewee noted that the users treated all the information found on the open Web as credible and did not understand the value of peer-reviewed information. The third interviewee found that users became upset when they did not get what they expected from the reference librarian, i.e. giving them the information in their hand immediately.

Half (two at CTL and two at UWCL) of the interviewees noticed a change amongst reference librarians. At CTL one interviewee reported that the Internet made it possible for users to do their own searches, and librarians were spending less time doing searches and more time on training. The second interviewee reported that librarians were much more desk bound. Firstly, because they could access everything from the computers at their desks and no longer had to physically look for information in different places. Secondly, because of the full text online databases and electronic journals, reference librarians were spending less time amongst the stacks showing and helping users get journal articles. E-mail was more likely to be used to communicate with colleagues than person-to-person contact. At UWCL, one interviewee related that the introduction of the many online databases brought about a change in the way they worked, and consequently they were working more closely together. The second interviewee speculated that their policy would change once the donated computers were installed and more users were given access at the same time. They believed that in the future they would downplay the individual assistance and put more emphasis on training.

6.9. Summary

This chapter presented the results from the interviews done with a sample of reference librarians at the CTL and the UWCL. The results of the interviews show the inequity in the facilities available to users in the between HDI and HAI libraries. Consequently, although UWCL had access to the Internet for much longer than at CTL, UWCL could not provide unfettered access to their users. Student were using the Internet mostly for academic purposes and librarians were using it not only for finding information on the open Web and online databases, but also for communication, professional development and collection development and some were even developing SBIGs. Neither of the two libraries offered an electronic reference service and used e-mail simply for communication. The librarians at both institutions received formal Internet training from the regional and national consortia, but valued informal training more. Most of the Internet instruction took place on an individual basis at the point-of-use. Librarians attitude toward the Internet were mostly positive, and they identified several benefits and problems with regard to the Internet, which indicate that the librarians had integrated the Internet as an information tool. The search behaviour of user and librarians changed, but there seemed to have been little cultural change in libraries. The

results of the interviews supports and provides depth to the understanding of the results of the questionnaire.

Chapter 7

Discussion of the findings

7.1. Introduction

This study aimed to explore the extent to which the Internet is accessible and used in South African higher education libraries by reference librarians and users. This chapter discusses the results of the survey within the context of the research problem by looking at the research objectives.

7.2. User Internet Access and Training

The first objective of this study was to establish to what extent students at tertiary institutions have access to, and training to search and use the Internet in the library.

7.2.1. User Internet access

All but one of the 26 libraries in this study provided Internet access to their users. Users had access via librarians, dedicated terminals, OPACs or computer rooms or a combination of these. In the libraries where users had access only via librarians, respondents indicated that this was due to insufficient facilities and that an imminent donation from the European Union and Department of Education would alleviate the pressure on the librarians to do the Internet searching for the users. This compares well to the results of the 1997 study of Tenopir and Ennis (1998a). In their study of 68 ARL in the United States and Canada, they found that only two of the libraries did not support end-user access to the Web.

The majority of the libraries in this study provided free access to the Internet to all the students and staff. The libraries surveyed had provided access to the Internet for an average of 3.5 years. Just over of half (13) of the libraries that provided access, did so from all the user terminals in their library. Tenopir and Neufang (1995b) found in their 1994 study that one third of the libraries surveyed were providing access at all their terminals. While their study was done six years prior to this study, it was conducted in developed countries. By

contrast South Africa is a developing country and has a history of inequitable resource allocation to overcome in 17 higher education institutions.

The total number of user terminals in the library should be compared to the user population. The libraries in this study provided an average of 29 user terminals/workstations and 17.5 Internet terminals/workstations to an average student population size of 12 211. This yields a proportion of one user terminal/workstation for every 421 students and one Internet terminal for every 698 students. While these averages give an indication of the resources available to students, it does not indicate the difference in resources between a HAI and a HDI. While at UWCL, an HDI, users had controlled access to the open Web at four user terminals at the central reference desk, at CTL, users had Internet access at 19 of their 39 user terminals, their users had unfettered access to the open Web. The Internet user policy at UWCL is necessitated by the lack of computer terminals/workstations available to users. Similarly Saeed et al's (2002: 157) study of 20 university libraries in Pakistan found that one of the biggest obstacles in the wider use of the Internet was the lack of adequate computer terminals. Tenopir and Neufang (1995b) reporting on their 1994 study found the lack of adequate workstations for users as one of the biggest problems since the introduction of the Internet. However, in the 2000 study of 70 ARL libraries, Tenopir and Ennis (2001: 41) report that the majority of libraries provided more than 100 terminals to 10 000 or more students. This yields a proportion of one terminal to 100 users.

Users have access to the Internet at libraries in South African universities and technikons. However, the libraries do not have sufficient user computer workstations/terminals for the optimum use of the Internet.

7.2.2. User Internet training

All but 3 (12%) of the libraries provided Internet training to their on-site users. However, training was provided mostly on a one-on-one basis, group library instruction and special interest classes. The trend is that Internet instruction was not given as part of library instruction. This trend is supported by the findings of the interviews as well. Only 37.5% of the interviewees indicated that they included Internet instruction with other library databases. However, this included only very basic instruction. Only two of the interviewees offered a special interest class instruction on the Internet and only on request.

Remote user training was less common. Less than half, 10 or 40%, provided Internet instruction to their remote users. This training was done mostly on a one-on-one basis via e-mail or online.

Similarly, Tenopir and Ennis (1998a) found in the 1997 study that all but two of the 68 libraries offered Internet training to on-site users. While they also found that Internet training for remote users was less common, just more than half of their respondents offered some assistance. In the 2000 ARL study, Tenopir and Ennis (2001: 42) found the situation only slightly improved with two-thirds (44 of 70) libraries providing remote instruction. They conclude however, that remote instruction is becoming an important library service.

The trend among the libraries surveyed seems to be individual instruction at the point-of-use. The benefit of this approach is that reference librarians could customise the instruction to the specific needs of the user. However, this would be extremely labour- and time-intensive for reference librarians. This instruction is not adequate if one considers that there are an average of 1565.5 students for every one reference librarian in this study.

7.2.3. User Internet usage

This study found that the Internet was used for academic rather than recreational purposes. Academic use included mostly database access, search engine searches, specific URL's and to find images. Non-academic use included searching for job advertisements, current affairs, entertainment and e-mail.

The majority of the interviewees (6 or 75%) thought that the user search behaviour had changed. They searched the open Web before going to the databases and print sources. Because the online databases have migrated to the Web they now have direct access to the databases and the librarians were no longer doing as many intermediary searches. Consequently the users were more involved in the searches. They had to define their search terms more closely as the databases they had direct access to, were more advanced. They preferred the full text databases and one librarian described their behaviour as "addicted to the full text databases".

User expectations and attitudes have also changed. The librarians reported that users expect to find what they were looking for in the library. They expected to find all information they need on the Internet fast, and they expected to find the full text documents online. A few librarians noticed that users were more confident and independent of the librarians, that users did not evaluate the information found on the Internet and expected to find the sought information immediately. Similarly in the 1997 ARL study, the librarians reported that user expectations and attitudes toward the search process had changed. They found the most notable change had been increased expectations; users expected to be able to answer every question, and do every research project online, and users expected full text and are surprised if a source is not full text (Tenopir & Ennis, 1998a; Tenopir & Ennis, 1998b).

From the results of this study there appears to be no change in the interaction between the user and the reference librarian. Although the length of interactions had increased, the number of queries had not. Tenopir and Ennis (1998b) found that the reference interview took longer and more time was spent with an individual user. The search process took longer too. Librarians would go much further with a question before they were willing to give up because of the number of databases available and their sophisticated search function, in addition to the open Web. In the 2000 ARL study the librarians reported that because of the number of databases available it takes longer to evaluate each and explain each to the user. Selecting the best resource has not only become more complex, but so also the query. Queries often also involve both answering the question and instructing the user in accessing and utilizing the online database or resource. The latter includes teaching users database coverage, Boolean logic, search commands and scholarly information process and helping students evaluate the resources they find (Tenopir & Ennis, 2001: 44). All of these have had a negative impact on reference statistics.

7.3. Usage and integration of the Internet as an information tool

The second objective of the study was to assess the use of the Internet as an information tool and how well it has, or has not, been integrated with the rest of the tools that reference librarians use daily. Two research questions were derived from this objective, namely, what

did the Librarians use the Internet for, and to what extent was the Internet used in their work on a daily basis?

To answer these questions the study investigated the access and attitude of the librarians to the Internet, as well as its use for answering reference queries, searching the open Web, online databases and Web OPAC, and assisting users. The study also investigated to what extent working on the Library Web site would impact on reference librarians.

All of the librarians had access to the Internet. This compares very favourably to a study of Saeed et al (2000: 156), conducted in Pakistan's University libraries, that found that among the 20 respondents, half did not have Internet access, although the Internet had been introduced into Pakistan's non-commercial institutions in 1995.

Furthermore, the librarians in this study have had Internet access for an average of five years, with only one library that has had Internet access for less than one year.

7.3.1. Electronic reference

Up to five (19.2%) of the respondents did not offer an e-mail reference service. On average, respondents received and answered 2.25 queries a day. Just over half, 13 (54.3%) indicated that the library Web site generated reference queries; an average of 2.6 queries were received per day. The literature on electronic reference reports low volume of use of these electronic services. Schneider (2000: 96) reports "several dozen questions a month" received by e-mail. Similarly, Stormont (2001: 132) reports that 12 to 15 questions a week, an average of two per day, in the first 6 weeks of their service at Temple University and an average of 20 to 35 questions a week later. However, low usage reported in these services, was due to lack of proper promotion of the service (Oder, 2001: 48).

7.3.2. Answering queries using the Internet

All the libraries in this study had Web access to the online subscription databases. The majority of the online databases offered in the libraries were on the Web. SABINET was offered by all the libraries, closely followed by EbscoHost, then Swetsnet and Nexus; and

then MCB Emerald and OCLC Firstsearch. Moreover the preferred mode of access was the Web, with the sole exception of Jutastat, where the majority of the libraries had CD-ROM access. In addition, 19 or 76.9% were using a Web OPAC. This compares well to the study of Saeed et al (2000: 157) that found that only 2 of the 20 responding libraries, (10%) reported that their OPACs are accessible via the Internet. Thus, the Internet was being used to access all information sources in the majority, at least 19 (76.9%), of the libraries in this study. The reference librarians could therefore be spending the majority of the time using the Internet to access or search for information because the resources were accessed on the Web.

The CD-ROM databases had a lesser role in the libraries than the Web online databases. While many libraries still have CD-ROM databases, as Tenopir and Ennis (1998a) concluded, the trend is to replace CD-ROM databases with online databases on the Web. The main reasons for this is that it removes the burden of loading and maintaining the databases in terms of the technical problems and requirements, relieve pressure on systems staff and less costs, and the limitation of CD-ROM in the amount of material it can provide, particularly because users want the full text of everything (Tenopir & Ennis, 1998a).

The librarians were using the OPAC an average of 15.6 times a day; the online databases an average of 13 times a day and the open Web an average of 10.3 times a day to answer queries. Abdoulaye and Majid (2000: 385) reported a lower average of 6.74 queries answered using the Internet. The online subscription databases represent a number of different sources of information; the OPAC and open Web each represent only one source. The librarians were using the Internet frequently to answer reference queries. Librarians used the Internet mainly for on site ready reference, and for queries received via e-mail and mostly for database access, e-mail and search engine use.

The libraries surveyed tended to offer mediated rather than end-user searching for the online databases, with five exceptions, namely, EbscoHost, Swetsnet, MCB Emerald, Gale Infotrac and Wilson. The tendency to provide mediated searches for the online databases may be ascribed to, as with the user access to the Internet via librarians, insufficient facilities. If there are not enough user workstations, loading a number of online databases on these workstations may prevent other users from doing a simple query to find books on the library OPAC. Therefore it would make sense to rather provide the online databases via librarians who can

execute a search faster. This is in contradiction to the findings of all the ARL studies that showed decreasing number of mediated searches and an increase in end-user searching (Tenopir & Neufang, 1995; Tenopir & Ennis, 1998a). The most recent study showed that 90% of the ARL libraries offered end-user searching (Tenopir & Ennis, 2001: 44)

EbscoHost, Swetsnet and MCB Emerald databases are amongst the databases that were offered in the majority of the libraries as Web accessible. The Web versions of the online subscription databases are designed with the end-user in mind (Tenopir, 1998). Therefore, the fact that these databases were accessed on the Web may be a contributing factor in making these databases available to users as end-user search databases. EbscoHost is also part of the Electronic Information for Libaries (EIFL) project, which made this database available to higher education libraries at a much-reduced cost.

Half of the librarians interviewed noticed a change amongst reference librarians. Librarians were spending more time on training and less time doing searches, were more desk bound as a consequence of having electronic resources at the desk computers and did not have to physically move round the stacks of the library. E-mail was the preferred communication tool amongst colleagues.

Librarians' search behaviour had not changed in approach and process but the medium and number of the tools had changed. As all the online databases were on the Web including the OPAC, thinking and clarification of the terms also had to happen much faster. There are more sources of information available that had to be worked into the search process. While the online databases were the librarians' first options, the open Web was included and is very much part of the search process.

7.3.3. User assistance

Librarians helped users on average 13.4 times a day with the OPAC, 13.3 times a day with the online databases and 7.8 times daily with the open Web. Abdoulaye and Majid (2000: 385) found a higher average, of 9,03 requests for assistance with the open Web daily.

The numbers show a trend that users asked for assistance almost equally with online databases and the OPAC. Again there were many online subscription databases and users had to be guided to the most appropriate database, and users needed to be instructed on how to effectively search these. It is therefore reasonable that there was an equal request rate for online databases and the OPAC. The OPAC and open Web each were only one source. However, again as with the reference librarians' use, 83.5% of the libraries in this study had a Web OPAC and the majority of the libraries had Web access to the online databases, with the exception of Jutastat. It also shows that users are using the Internet in the library.

The Internet has therefore not done away with the need for user assistance. Instead it is another tool that users need assistance with. Furthermore, while librarians report that they are seeing more users who are confident with using the advance technology and do not want the help of librarians, some users do not have basic computer skills.

Tenopir and Ennis (1998b) found that many users still need basic computer literacy instruction before the advanced aspects of search strategy can be included. Users who are computer literate needed guidance to the most appropriate resources and needed assistance with using the databases because of variety and sophistication of search interfaces. Unrealistic user expectations also points to instruction that should include critical evaluation of authority of the Web content. Instruction programs require more guidance on search strategies and information structure. Even when they can search the different databases, they needed librarians to synthesise the information, to make sense of it because they got lost in the mass of information. For this reason librarians found it necessary to increase the variety instruction and intensify their instruction (Tenopir & Ennis, 1998b).

7.3.4. Library Web Sites – New work for Reference Librarians?

Questions were asked on the involvement of the reference librarians in the design and updating and maintenance on the Library Web site to determine to what extent it would impact on the daily work of the reference librarian. The Web makes it possible for reference librarians to make themselves accessible in an electronic environment and to provide guidance to users, in the form of evaluated and selected subject specific Web portals or

gateways, 24 hours a day, seven days a week. This is a way in which to integrate the Internet with the reference librarians' work that goes beyond using the Internet as an information tool.

Although the majority of the respondents not only had a library Web site, but also had the their catalogue and their online subscription databases accessible from the Web, only six (25%) indicated reference librarian involvement in the design of the Web site. However, seven (29.2%) librarians had individual pages and were responsible for updating them as well on a monthly, quarterly and semesterly basis. On average they spent 6 hours per month updating their Web sites.

The librarians reported that although they were involved in the initial design stage, they now only provided feedback. Thus the Library web site did not impact significantly on the work of the reference librarians in this study.

7.3.5. Reference librarians' attitude toward the Internet

All of the interviewees had a positive attitude toward the Internet. They identified immediacy and ease of access, the currency and vast amount of the information found on the Internet, the speed of retrieval and the availability of full text and the constant availability of the Internet as benefits to the users and of the Internet as an information tool. Of particular benefit to librarians were: the Internet had facilitated communication and international communication between colleagues, expanded the limited library collection, aided the librarian in providing information by enabling them to satisfy of the user; helped the librarian do the job. This has resulted in increased job satisfaction. Tenopir and Ennis (1998b) also found that the librarians saw a direct correlation between the increase in electronic resources and their increased satisfaction with their jobs. Abdoulaye & Majid (2000: 386) similarly found that 95% of their 40 respondents agreed or strongly agreed that the Internet has enhanced reference services a great deal.

They librarians in this study also identified the problems: the slow access and download speed because of poor bandwidth, the Internet search engines lack the sophistication of the online databases, lack of information literacy amongst users, information overload, and lack of longevity of sources on the Internet. For librarians, keeping up to date with developments

on the Internet is a challenge. Similarly Tenopir and Neufang (1995b) found that the accessibility and quality of information on the Internet to be a problem. In the study of Abdoulaye & Majid (2000: 386) several librarians also noted that the librarians are overwhelmed by the constant change.

The opinions of the librarians in this study on whether the Internet is a threat or revitalising agent in reference librarianship, did not show a clear preference for either. Half thought reference librarianship has revitalized, only one librarian thought it was a threat and three thought it was both. Those who thought the Internet is a threat argued that users could access the Internet themselves from anywhere and would therefore not use the library nor need librarians to help them find information. Those who thought it revitalized librarianship argued that because there is an abundance of information on the Internet users needed guidance to the most appropriate and relevant information. Those who thought it was both argued that it forced librarians to stay up to date with technology and that was the challenge. The Internet has increased the need of the role of the librarian as intermediary. Reference librarians have had to acquire technological skills and a mind set change that values access rather than ownership.

7.4. Reference Librarians' Internet Training

The third objective of this study was to establish the extent to which reference librarians have the necessary training and knowledge to give Internet instruction and guidance to their users. From the responses to the questionnaires it emerged that training had been acquired in a number of ways. The majority had formal workshops (22 or 84.6%) and taught themselves (19 or 73.1%).

This is supported by the findings of the interviews. Neither of the two libraries had an in-house training programme on the Internet for the library staff. All of the reference librarians had received training from external organizations such CALICO. The reference librarians attached more value to the self-taught efforts than the formal workshops and viewed these workshops as an introduction. All of the librarians interviewed reported having been mostly self-taught, by reading and actual use in response to answering queries or exploration; and by sharing amongst colleagues. These results are similar to the Tenopir and Neufang's 1995

study (1995b: 390) that showed that there was no ongoing staff programme and that libraries relied on their regional networks and consortia for Internet instruction.

All the librarians were confident in their searching ability of the Internet. However, most felt that there is always room for improvement and that with the Internet one could never claim to know it all.

As with Tenopir and Neufang's study (1995b: 392-393), the advice to libraries that are introducing the Internet emphasised the need for good training of users and also of librarians. Other advice included the provision of sufficient facilities, including printing facilities and monitoring the use by users.

7.5. Summary

This chapter discussed the conclusions drawn from the results of the study under each of the research objectives. Users and librarians do have access to the Internet and were using it. Librarians had received training on the Internet and were instructing users.

Chapter 8

Recommendations

8.1. Introduction

This chapter makes recommendations for future practices based on the results of the study. The recommendations include the provision of adequate computer facilities and national information technology infrastructure, the provision of electronic reference services, standardised user training and remote training.

8.2. National government level

The slow downloading speed and inadequate student access to computers and the Internet are problems that not only libraries are struggling with, but the rest of the campus and South African society as well. It should therefore be addressed at national government level.

The Department of Education and the Department of Communication should jointly address Information and Communication Technology in higher education in particular. The two departments have released a strategy for information and communication technology (ICT) in education in 2002. However, this strategy focuses on Early Childhood centres, primary and secondary level education (South Africa. Department of Education & Department of Communication, 2002). The strategy on higher education should include the objectives, financial aid, infra-structural support and maintenance from the two departments. The technikons and universities should align their ICT policies and strategies with those of the government, and should therefore also be consulted in the drawing up of this policy. The contribution of the library sector should be included and should be given due weight, as librarians are the biggest consumers of the ICT at higher education level.

The educational outcomes of the strategy should be made clear. It should describe the skills, knowledge and experience the new graduate should have in order to compete in the global Information Society. It should also describe the education and resources that students should have access to at institutions of higher education, especially, in the libraries, to support this

outcome. The document should set a standard or a target of the ratio of computers to number of students that would be optimal to support this outcome. These computers should also be points of access to the Internet. For example, the government of Ireland has set the target at one computer for every three students, but are currently providing, at the least one computer for every 33 students (Union of Students in Ireland, 2001).

The document should also outline strategies to optimise existing resources and infrastructure on the campuses and make it accessible to the students. While there may be enough computers on South African higher education campuses, students may not have access to them. During the day the computer laboratories are used for teaching and in the evening they are locked. Thus, students do not have free access to computers except those in the library. The computers in the library are in turn often exclusively used for searching the library's electronic resources. The Royal Melbourne Institute of Technology University (1999) transferred their existing laboratories from the campus ITS department to the library, and converted them into Learning Resource Centres. This has resulted in easier access to students, as well as longer access, as it would tie in with the libraries opening hours. Moreover, their strategy includes instruction on information literacy and basic computer literacy (Royal Melbourne Institute of Technology University, 1999).

The document should also undertake to explore other projects to provide computers and infrastructure on campuses, especially in libraries. For example, the Library Programme with its donation of computers from the European Union and cabling funded by the Department of Education (South Africa. Department of Education, 1999).

Finally, the document should outline strategies to increase bandwidth in the higher education institutions. These should include replacing old computers with newer, faster computers; updating campus networks to support higher bandwidth connections and stabilising networks to reduce downtime; and finally, providing the educational sector with a separate national Internet broadband connection points. The latter should include wireless connections. These connections should be provided to the education sector at a reduced cost to the individual institutions. The difference in cost could be made up with funding from the Department of Education or outside donors. However, the South African government and its educational

institutions must put the development and maintenance of its ICT as a priority in their budgets, and invest their financial resources in it to make the African Renaissance a reality.

8.3. Library management level

8.3.1. Electronic reference service

Many libraries in South Africa have provided users with remote access to the electronic resources via the Library Web site. Electronic reference services should therefore be the natural consequence to these developments. Electronic reference provides libraries with the opportunity to make reference help available during more hours and by more means of communication (Boyer, 2001). In so doing, libraries are able to reach more users than before. Recently, institutions of higher learning in South Africa have been allowed to offer distance education courses (South Africa, Department of Education, 2001). Institutions offering such distance education create more remote users for those libraries. In accordance with the national higher education restructuring to rationalise the 36 higher education institutions to 21, some libraries are going to become decentralized with the result that not all library users will be within walking distance of the library they need. This will create remote users for the libraries that these users need to access. All remote users should get the same library services as walk-in users. Users can ask for help anonymously, thereby, providing those who do not want to ask for help in a face-to-face situation, a means to do so (Gray, 2000: 372). Electronic reference services allow the library to compete with commercial "ask-a" service and at the same time ensuring that users receive quality information (Parsons, 2001).

From the results of the study it seems that libraries in South Africa are providing an e-mail reference service. However, it is characterised by low usage. This was initially also the experience of libraries in other countries, where the problem with low usage had very much to do with the lack of advertising and promotion of the service. Often the only indication that such a service exists is a link, often not prominently displayed, on the library Web site or Web form (Schneider, 2000: 96). Having several e-mail addresses to the subject reference librarians, which again are not well displayed, may further hamper usage. Libraries that have displayed a single link in several prominent places on their Web site, in addition to prominently displaying it on the main library page have seen an increase every month in the usage of the electronic reference service (Tenopir, 2001: 40). In addition to using the Web site, libraries could advertise in their campus publications, as well as any library publication. Subject/faculty librarians are perfectly placed to promote the service in the faculty that they are responsible for. Libraries could also use the local newspapers and television to advertise and promote such services, especially where the reference service is extended to users outside the parent institution.

Another reason for the low usage may be the very nature of e-mail reference, which is considered to be a more leisurely service. Many libraries offer a 24-hour turn-around-time for queries. This response time may not be suitable to users (Abels & Liebscher, 1994: 187).

For this reason many libraries in other countries that have provided e-mail reference service are now providing or experimenting with a real time reference service, such as chat, voice over the Internet, and conducting videoconference (Oder, 2001: 48). This involves the user submitting a question electronically and receiving a response from a librarian within seconds, as opposed to e-mail that could take several hours or days (Stormont, 2001: 129). The technology also allows librarians to send Web sites to a user's browser while chatting with the user. It also logs and captures reference sessions in files for assessment and analysis. Further developments in technology also enable the librarian to move the user's cursor (Oder, 2001: 48; Stormont, 2001: 149).

Electronic reference services must be developed as a core service in South African academic libraries. In recent literature several authors have looked at models of electronic reference. It is recommended that libraries that are planning to implement such a service, should consider those models and guidelines. The guidelines suggested by Sloan (1998) for the support of such an electronic reference service are outlined as well as suggestions from other authors.

Management: On the library departmental level, reference and user services must support and be committed to provide the service. In fact the service must be developed as a core service, and not an add-on service. Therefore, library management must also commit to and support the service, especially monetary support. On the campus management level, the service will be dependent on the infrastructure of the campus. Therefore it is important that the campus managers of the technical infrastructure understand the goals of the library in providing an electronic reference service.

Services: A number of decisions need to be made around what services will be offered and how the services will be offered. For example, how comprehensive will the service be? Will librarians provide more in-depth answers? Will document delivery be part of the service? Will services be Web-based or e-mail?

Powel and Bradigan (2001: 175) reported that queries that originated as e-mail queries received different services from the queries that came from walk-in users or users who phoned in. Tenopir (2001: 38) found in her survey that e-mail queries received more in-depth answers. Libraries who introduce electronic reference services should ensure fair and equitable service to all users regardless of how the query originated and write this into policy. This implies that the service should extend beyond ready reference questions, to include all types of questions. Diamond and Pease (2001: 210) have found in a recent study that the electronic reference service can handle the full range of simple and complicated queries that are received at a physical reference desk. These questions also offer opportunities for instruction (Gray, 2000: 370).

Oder (2001: 48) argues that all the technologies, e-mail, chat, fax, telephone, should be used in reference services because they each serve a need. He argues that ready reference questions are better suited for real time responses, while questions requiring research are better suited for e-mail. It also gives users various modes of communication and makes it easier for them to pose a reference question (Tenopir, 2001: 38).

Primary clientele: Decisions have to be made around who will be served. Should all of the parent institution's staff and students be served, or only segments of it, e.g. only distance education students. It makes sense to start the service with a well-prepared target population, e.g. those who have a strong culture of e-mail use. This would increase the chances of a successful program, which in turn increases the chances that those who are not familiar with e-mail will use the service as they become ready.

Personnel: Staff have to be allocated to the service. The work has to be spread amongst the reference librarians. The responsibility must be formally stated and integrated into a reference librarian's assignments.

Stormont (2001: 131) and Boyer (2001) have found that electronic reference could not be done at the reference desk. Reference librarians are now using their offices to answer chat and phone queries or an "off site" reference desk, which was created for this purpose. This also makes it possible to have more staff available to answer queries via chat, which means that more queries can be handled that way. In addition, it allows the work to be evenly

distributed and the reference desk staff are not put under pressure. Whatever staffing model libraries decide on, it should ensure effective staffing schedules so that the service is adequately staffed.

The introduction of electronic reference service also means that reference librarians have to learn new skills for the new tasks. Chat reference requires telegraphic style language, while e-mail requires a "softening of language" (Oder, 2001: 48). In addition, chat reference requires fast typing, and short and to the point sentences. Librarians should also use pre-formatted messages for frequently used responses, which will speed up the process and let the user know what is happening, e.g. this will take a few moments (Stormont, 2001: 130).

Infrastructure/facilities: The technology and infrastructure of the users and campus must be taken into consideration when planning electronic reference service. For example, one cannot plan a videoconference reference service when the users do not have the software and hardware to support it and the campus network does not have enough bandwidth to support quality images. The reference librarians must be equipped to do the job. Workstations should be up to the task and network connections should be quick. The location of these workstations is also important. Reference librarians should not provide an electronic reference service from the reference desk where walk-in users will disturb them.

Finances: The electronic reference service must be integrated into the institutions management structure to be successful and continuous. A budget must be drawn up which includes personnel, equipment, including upgrades and maintenance, software and supplies. Stormont (2001: 132) reports that a grant could be used to start such a service, and that many libraries are using their regional library consortia to purchase the software.

Evaluation: The evaluation of the service must also be planned. Both real time reference software and e-mail allows for the gathering of data into files that can be analysed and evaluated. The criteria by which the service will be evaluated e.g. the goals and objectives of the service and comparison with traditional in-person service should be considered. However, ethical issues like the user confidentiality and privacy must also be taken into consideration.

The provision of electronic reference in South Africa should be done from several points. Individual libraries should take the initiative to develop electronic reference as a core service, and obtain partner libraries in other countries and time zones to provide a truly 24 hour, seven days a week service. National consortia, e.g. Coalition of South African Library Consortia (COSALC) and SABINET, and regional consortia, e.g. CALICO, should also network the service, so that users have optimal access to the best information that are held in the collections of the libraries but are not available online. This should aid in overcoming past imbalances amongst libraries and would provide equal access to information to all users.

The national and regional consortia should include the National Library of South Africa, and participate in the Collaborative Digital Reference Services (CDRS) started by the Library of Congress. The CDRS aim to develop a global reference network, which will provide users access to the library collections which are not available online in addition to the Internet resources (What is CDRS, 2002). The CDRS already have the national libraries of Australia and Canada, as well as many academic libraries as members (Mayfield, 2000). South African users would then have access not only to the best information in their own country but also worldwide. The national consortia should also investigate the participation of other African countries to initiate an African reference network.

The Library and Information Association of South Africa (LIASA) should be involved in the setting of standards and guidelines for such services in South African libraries and support national efforts.

8.4. Librarian level

8.4.1. Internet instruction

The results of this study indicate that most of the Internet training took place at the point-of-use. While there were some Internet training programmes done as special interest classes, the Internet was merely introduced in some of the library instruction programmes. None of the libraries offered Internet training to the library staff. While instruction theory shows that skills training should be done at the place and time of need, this may not be a practical solution as those who most need help, will not necessarily ask for help from the reference librarian (Arp, 1995).

Internet training, as well as online database training, should be done at all these levels, namely, individual point-of-use, integrated as part of library instruction and as special interest classes. However, it should be done as a co-ordinated and systematic programme with specific objectives and appropriate handouts within a library, and not haphazardly with each reference librarian working in isolation. There are many examples in the literature on how to do Internet training. Fonseca and King (2000) offer the following template to integrate Internet training into traditional library instruction. Their template is recommended because reference librarians usually are granted only one session to teach students how to use the resources in the library. If reference librarians are to teach the Internet, it will have to be incorporated into that session.

Fonseca and King's (2000) suggested demonstration starts with the OPAC and the various types of searching on a relevant topic that can be done on it, followed by how to locate printed book sources, including non-circulating and special collections; how to locate printed and access electronic journal collections, including full-text online databases; how to access special online resources such as CD-ROM and Web-based products and then how to use Web directories and search engines to locate other Internet resources. This should include an explanation on:

- Describing the difference between directories and search engines, explaining the usefulness of each,
- How to devise a search strategy and create a search statement, explaining the difference between a phrase and keyword search,
- How to choose search engines, review help files for chosen engines.
- The evaluation criteria,
- Web sites that detail specific information about search engines,
- How to read URL's to evaluate Web site's usefulness
- Search tools and how to find them on the Web,
- Shortcuts or tips for locating information within a site.

Finally, distribute handouts that describe the process so that steps can be remembered (Fonseca & King, 2000).

Reference librarians, especially those who have faculty liaison responsibility, should work closely with faculty to integrate Internet training into the curriculum. Indeed, Internet training should be part of the integrated information literacy programme because to search the Internet effectively, users will need critical thinking skills. Critical thinking skills are required when searching the Internet in particular, because of the amount of information retrieved that users have to sort through, users have to evaluate the quality of information found and understand the broad context of Internet and its relationship to other online databases (Pask & Snow, 1995).

McDermott (2000) points out that the same criteria that librarians use for library collection should be used to teach users to evaluate information and resources on the Web, namely, authority, currency, accuracy or bias, commercialism which refers to paying for information, which may be available elsewhere on the Web or in the library for free, purpose and scope. Braun (2000: 28) teaches users to evaluate and analyse information found on the Web by teaching students how to create a Web page. Students create the Web page immediately from a template in a handout that covers the basics of the first page in HTML. This should include the tags that are required on every page, paragraph and break tags, and basic font size tags. The students quickly type up the information from the handout in an application such as Word Pad in Windows, save it as an HTML file and view it in the browser. This should take 15 minutes to do. More HTML coding is taught, then the layout and design, including colour and font is then discussed. Once students are comfortable with these, the importance of planning and organising information is discussed, which gives students an understanding of a site's structure. During the various discussion sessions students look at examples of good and bad layout and design, site structures. These help students to analyse what makes good and useful sites and makes them more observant (Braun, 2000: 30). This sort of training is recommended for special interest classes on the Internet.

8.4.2. Online instruction

As users become familiar with the online library databases and resources, their expectations to access these remotely will increase. This presents reference librarians with an opportunity to not only teach Internet searching, but other online databases and resources, especially the catalogue, by means of an online tutorials, e-mailed lessons and live instruction classes using

chat technology. Attempts have also been made to teach information literacy online. Like the electronic reference services, online instruction is a way of providing users with the skill to find quality information.

Online tutorials make this instruction available 24 hours a day, seven days a week. It gives users the opportunity not only to access the instruction when it suits them, but also provides users the opportunity to review or re-do a tutorial on a database they do not often use. Online tutorials have the advantage of providing the kind of just-in-time, on-demand help to individual users without the labour- and time-intensive cost of staff. Ardis (1998) has suggested the following guidelines to develop an Internet-based tutorial. The first step is to collect ideas that could originate from experience, the tools and tasks that users have difficulty with. It is important to have a clear idea of the benefits of the tutorial to users, these benefits should be evaluated and measured; who the users will be and what their characteristics are. When the content has been collected, it should be organised into logical modules. Decisions should be made around how the tutorial should look, bearing in mind screen dimension and navigational techniques. The design of the tutorial should take into consideration the legibility and layout, which make it easy for users to discriminate between input boxes, navigations aids and text. The graphic layout should be used consistently. Finally the tutorial should be tested and edited, before being implemented.

While online tutorials can be referred to again and are constantly available on the library Web site, remote or distributed users may need to learn from a live person. Libraries should also explore the use of the chat software, used for electronic reference services to answer queries, for class instruction. Viggiano and Ault (2001: 136) describe the use of chat technology for an instruction session in a virtual classroom. Online instruction was planned with and promoted by course instructors. While topics of instruction included the usual library instruction topics, like basic research techniques and developing effective research strategies. It also included remote access issues such as selection and searching remote online catalogues and databases. Transcripts of the sessions were e-mailed to users and also posted on the library Web site for future use or review or users who missed the class. While all that is required for the user who participates in the virtual classroom is to be able to use chat technology, which means logging on and typing their message in a text box and hit the send

button, the librarians should consider registration, staffing, use of scripts and be prepared for technical problems.

Viggiano and Ault (2001: 137) suggest scheduling more than one session for each class, one during the week and one over the weekend. Users should be asked to register in advance to ensure adequate staffing and also to problem-solve any problems users may have with signing up before hand, including sending e-mail with basic commands and how to log on. Smaller numbers makes it easier for the facilitating librarian and encourages questions from the users. The staffing of the virtual classroom is much like the hands-on class of a real classroom, with one librarian leading the discussion and another assisting students with difficulties. A pre-written script is recommended for the librarian leading the discussion to help keep the lecture on topic, which can be copied and pasted into the chat software as the session progresses. Finally, librarians conducting virtual classrooms should be prepared for unexpected technical problems, including having a back-up plan e.g. additional staff, scripted instructions for dealing with certain problems and another date should the session be cancelled.

The reality in South Africa is such that online instruction is not an immediate possibility for many libraries. For these libraries, Internet technology, in the form of e-mail can be used to instruct remote users. This is particularly suited to teaching users how to use the Internet and search the Web. Vishwanatham, Wilkins and Jevec (1997: 435) describe such a course where sessions were e-mailed to users twice a week and included exercises for users to complete. They designed the course with specific objectives in mind; it must assist as wide an audience as possible including students, faculty and other staff with varying levels of skill, and the format of the lessons must be consistent, concise and encourage further exploration. The lessons were developed from the general to the more specific. Again, as with any other course, it was publicised using all the media available on campus, including posters and flyers. Apart from the fact that the users did not have to meet in one physical space which means losing anonymity; and one time which may not be convenient to everyone, users could also skip over the sessions they did not need and could review the lessons at any stage (Vishwanatham, Wilkins & Jevec, 1997: 442).

8.5. Summary

Libraries and librarians in South Africa are using the Internet as a communication tool and to find information, but are not using it to provide reference and end-user instruction services. Developments in the last few years have made it possible to provide remote Web access to many of the library online databases on the Web. Libraries and reference librarians should therefore prepare for services, including providing reference services on the Web, which will provide the users with access and the skills to use the databases, including the Internet.

Chapter 9

Conclusion

9.1. Introduction

This chapter concludes this thesis by presenting a summary of the study and identifying the shortcomings of this study and making suggestions for further studies.

9.2 Summary

This study investigated the impact of the Internet on reference services and reference librarians by exploring the following areas.

4. To what extent students at higher education institutions have access to, and are given training on how to use the Internet in the library.
5. Assess the use of the Internet as an information tool and how well it has, or has not, been integrated with the rest of the tools that reference librarians use.
6. To what extent reference librarians possess the necessary training and knowledge enabling them to give Internet instruction and guidance to their users.

To investigate these questions, an electronic survey was done using the Web and e-mail to distribute the questionnaire. Reference librarians at a HDI and a HAI were interviewed. The questionnaire was divided into six sections, and consisted of multi-choice answers with an open-ended question at the end of each section inviting respondents for further comments. The interviews were structured and the consisted of mostly open-ended questions. The questionnaire and interview schedule, based on those of the 1994 study of Tenopir and Neufang (1995), yielded the data needed to answer the research questions.

The results showed that all the responding libraries had Internet access and all but one provided user access to the Internet. The majority had provided user access for more than a year, with an average of three and half years, and allowed users to download the information found on the Internet. Libraries tended to provide free rather than pay access to the students and staff of the parent institution, but most did not provide access at all their user

terminals/workstations. Users seemed to be using the Internet mostly for academic purposes. All but three libraries provided Internet training to on-site users, but more than half did not provide training to remote users. Training tended to take place on a one-on-one basis at the point-of-use. Based on the results of the study, it seems that users cannot fully exploit the Internet and other electronic resources in the libraries due to insufficient computer facilities.

Reference librarians at all but one library had been using the Internet for more than a year, with an average of five years. The majority of librarians attended formal Internet training. Reference librarians interviewed indicated however, that they viewed this as introductory, and only developed their knowledge and skill on the Internet by actual use, either by self-exploration or in response to a request, and sharing with colleagues.

Librarians reported that users' search behaviour had changed and expectations had increased. Their first choice was to search on the open Web and they expected to find all the information they need on the Web immediately. Once they had been introduced to the online databases, they preferred the full text databases. Librarians also reported that although the duration of reference queries had increased, the number of queries had not. Librarians used the Internet mostly for database access and used the search engines to find information on the Internet in response to queries. They reported that most searches also included a search on the Internet, but they used their discretion on when the Internet was an appropriate tool to use. Librarians assisted users with, and were using the open Web searches very frequently. Librarians also recognised a number of advantages and problems that the Internet brings to reference librarianship. These included the immediacy and vastness of the information available on the Internet, empowering librarians to satisfy their users, which in turn increases their job satisfaction. They found that the biggest problem with the Internet was the slow downloading speed.

All but two of the libraries had a library Web site and the majority had made their OPAC and online databases accessible from there. However, only a small number of reference librarians had individual Web pages and updating these do not seem to impact heavily on their time.

The majority of libraries offered electronic reference via e-mail and the library Web site; however, frequency of use was low with an average of 2.25 queries a day via e-mail and 2.6 queries from the library Web site.

The majority of libraries offered Web-based OPACs and all libraries had Web-based online databases. Libraries tended to offer both end-user and intermediary searching on the databases. Librarians reported that while some users were confident with searching the open Web and online databases, and did not seem to want the help of librarians, some users did not have basic computer literacy skills.

Recommendations based on the results of the study included increasing the number computer facilities available to users and increasing Internet bandwidth to increase connection speed in higher education libraries. Since this is a national problem, it should be dealt with at national government level with all the role players involved, including library directors. At library management level it is recommended that libraries take advantage of the opportunities that the Internet brings. In particular libraries should introduce electronic reference as a core function of reference services. The current low usage of e-mail reference can be overcome by proper promotion. Libraries should also explore other electronic reference options. Libraries should increase their Internet instruction, using e-mail, online tutorials and virtual classrooms to reach more users, especially remote users.

9.3 Limitations and future research

The biggest shortcoming of this study is the low response rate. A low response rate is, however, typical of electronic surveys (Shannon & Bradshaw, 2002; Cook, Heath & Thompson, 2000; Sheehan & McMillan, 1999; Schaefer & Dillman, 1998). An avenue that was not pursued to ensure a maximum response rate in this study was establishing pre-contact with the potential respondents. Shannon and Bradshaw (2002: 190) suggest that contacting the potential respondents before distributing the questionnaire will increase the response rate. Pre-contact allows the researcher to check the accuracy of e-mail addresses and undeliverable e-mail addresses can be corrected or discarded from the study. It can reduce the perception of being spammed by unsolicited e-mail by providing the potential respondents the opportunity to express any concerns or even decline participation (Shannon & Bradshaw, 2002: 190).

Other factors that may have influenced the response rate in this study are: the novelty of electronic surveys even amongst those familiar with e-mails (Sheehan & McMillan, 1999: 51), and the compressed time frame of electronic surveys (Schaefer & Dillman, 1998: 392). Although the MS Word and text versions of the questionnaire were added as attachments to the e-mail message, some e-mail applications opened the attached documents in the text of the message, removing the Word formatting and making the questionnaire cumbersome to complete. One of the respondents upon inquiry, indicated that s/he had completed the survey in the "read" mode of the e-mail program and assumed that it would be sent when s/he clicked on the reply button. Another replied that s/he was working on an important project at that time and could not complete the questionnaire at present.

The questions regarding user assistance in the questionnaire, asked how often users asked for assistance. The way the question was phrased excluded the possibility of librarian's assisting without being asked, or a query naturally leading from one database to the other. These questions are also difficult to answer if libraries do not collect such statistics. For more accurate results, future research in this area should gather the relevant data from the statistical reports of libraries, or alternatively, do an observational study at several libraries at different times of the academic year.

Respondents were asked questions regarding user behaviour. The data gathered revealed the librarians' perception of user behaviour, which has suggested a line for further research. Further studies should be done on novice end-user online search behaviour, especially their use of, and searching on the Internet. Data should be collected from the users directly or from direct observation of user behaviour. Electronic options should be explored to gather data on the latter. Such studies should reveal what databases users are using, how effective their searches are, and what problems they are experiencing. The results of the study could be used in library planning and decision making with regard to database acquisition, Internet access and end-user instruction.

Further research should also be done into what kinds of Internet access students have in the library by investigating, amongst others, the Internet policy of libraries, how aware students are of these policies, whether these policies are publicised, whether they are adhered to and

whether the access students have is sufficient for optimum use of the Internet. Results from this will provide more information on Internet access to students at higher education institutions and what the attitude of the administration toward user Internet access is.

Collection development is one of the duties of many reference librarians. However, questions regarding Internet use in collection development were excluded from this survey. The Internet has given librarians more immediate access to what is new in print by way of the publishers' Web sites. The Internet has also made possible electronic purchases on bookshop Web sites. Research should be conducted into how this has impacted on the work of collection development. Such research should explore whether these developments have expedited the process and whether the reference librarian's job has been made easier in this regard.

This study explored e-mail reference, Web-based online databases, and library Web sites. None of these was possible before the advent of the Internet and Web. However, further research should be done on how libraries are taking advantage of or providing innovative services with the use of new technologies. Such research should indicate to what extent libraries are using new technology to their users' advantage. Further research should also be conducted into how libraries in South Africa are developing their Web sites and Web OPACs as the integrated "one-stop" ideal that libraries are working towards and whether there is a tendency to develop one over the other as the single interface to all the libraries resources.

9.4. Summary

This chapter concluded this thesis by presenting a summary of the study and making suggestions for further research based on the shortcomings of this study.

Bibliography

Abdoulaye, K. & Majid, S. 2000. Use of the Internet for reference services in Malaysian libraries. *Online information review*. 24(5):381-388.

Abels, E.G. & Liebscher, P. 1994. A new challenge for intermediary-client communication: the electronic network. *Reference librarian.* 41/42:185-196.

Abels, E.G. 1996. The e-mail reference interview. *RQ*. 35(3):345-348.

About VRD. 2002. *The virtual reference desk*. [Online]. Available: http://www.vrd.org/about.html [2002, May 28].

Ardis, S.B. 1998. Creating Internet-based tutorials. *Information outlook.* 2(10):17-20. [Online]. Available: http://www.sla.org/pubs/serial/io/1998/oct98/ardis.html [1999, June 18].

Arp, L. 1995. Reflecting on reflecting: views on teaching and the Internet. *RQ.* 34(4):453-7. [Online]. Available: Infotrac at http://infotrac.london.galegroup.com [2001, November 12].

Babu, B.R. & O'Brien, A. 2000. Web OPAC interfaces: an overview. *The electronic library*. 18(3):316-327.

Bates, M.E. 1997. The Internet: part of a professional searcher's toolkit. *Online*. 21(1):47-52.

Bergman, M.K. 2000. *The deep Web: surfacing hidden value*. [Online]. Available: http://www.BrightPlanet.com [2001, October 27].

Bordeianu, S. Carter, C.E. & Dennis, N. K. 2000. Delivering electronic resources with Web OPACs and other Web-based tools: needs of reference librarians. *Reference services review*. 28(2):111-118.

Boyer, J. 2001. Virtual reference at the NCSU libraries: the first one hundred days. *Information technology & libraries.* 20(3):122-129. [Online]. Available: http://www.lita.org/ital/2003_boyer.html [2002, May 21].

Braun, L.W. 2000. Learning from the inside. *Library journal. Net connect supplement.* 125(10):28-30.

Bristow, A. 1992. Academic reference services over electronic mail. *College & research libraries news.* 10:631-632.

Bristow, A. & Buechley, M. 1995. Reference services over e-mail: an update. *College & research libraries news.* 7:459-460.

Busha, E.H. & Harter, S.P. 1980. *Research methods in librarianship: techniques and interpretation*. New York: Academic Press.

Cailliau, R. 1995. *A little history of the World Wide Web from 1945 to 1995*. [Online]. Available: http://www.w3.org/History.html [2000, October 3].

Chamberlain, E. 1997. *BCK2SKOL lesson 2: History of the Net.* [Online]. Available: http://www.web.csd.sc.edu/bckskol/fall/lesson2.html [1997, June 14].

Cook, C., Heath, F. & Thompson, R.L. 2000. A meta-analysis of response rates in Web- or Internet-based surveys. *Educational and psychological measurement.* 60(6):821-836.

Cook, K. 1994. The incredible expanding OPAC. *Library journal.* 119 (21):69.

Diamond, W. & Pease, B. 2001. Digital reference: a case study of question types in an academic library. *Reference services review.* 29(3):210-218.

Dilevko, J. 2001. An ideological analysis of digital reference service models. *Library trends.* 50(2):218-244.

Dodson, S. 2001. The race for a new Internet. *Guardian unlimited.* [Online]. Available: http://www.gaurdian.co.uk/Archive/Article/0,4273,4294049,00.html [2001, November 19].

Eichler, L. & Halperin, M. 2000. LivePerson: keeping reference alive and clicking. *Econtent.* 23(3):63. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2002, March 26].

European Commission (E.C.) 1995. *White paper on growth, competitiveness and employment*. [Online]. http://www.ispo.cec.be/infosoc/whitepaper/top.html [1997, March 12].

Evans, B. 1999. The authors of academic library home pages: their identity, training and dissemination of Web construction skills. *Internet research.* 9(4):309-319.

Factiva, a Dow Jones & Reuters Company. [Pamphlet]. 2000. [S.l.]: Dow Jones Reuters Interactive.

Faries, C. 1994. Reference librarians in the information age: learning from the past to control the future. In *Reference services planning in the 90's*. Edited by G.Z. Eckwright & L.M. Keenan. New York: Haworth. 9-28.

Farmer, L.S.J. 1999. Building power by sharing what you have. *Library Talk.* 12(1):33-43.

Feizabadi, S. 1996. History of the World Wide Web. In *WWW beyond the basics.* [Online]. Available: http://ei.cs.vt.edu/~wwwbtb/book/chap1/web_hist.html [2000, October 3].

Fichter, D. 1999. Intranets: librarians, dive in. *Online.* 23(3):107-108.

Fingerman, S. 1999. Internet2 and the Next Generation Internet: two for the future. *Information outlook.* 3(11):44-45.

Fonseca, T. & King, M. 2000. Incorporating Internet into traditional library instruction. *Computers in libraries.* 20(2):38-52. [Online]. Available: Infotrac at http://infotrac.london.galegroup.com [2001, November 12].

Francoeur, S. 2001. An analytical survey of chat reference services. *Reference services review.* 29(3):189-203.

Freivalds, D.I. & Carson, S.M. 1991. The role of microcomputers in the evolution of the OPAC. *Library software review.* 10(2):110-114. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2000 May 29].

Garman, N. 1999. The ultimate, original search engine. *Online.* 23(3):6.

Geyser, E.P. 1992. Human factors in the interaction process between man and the user friendly information retrieval system. *South African journal of library and information science.* 60 (3):167-173.

Gomez Borah, E. 1992. Beyond navigation: librarians as architects of information tools. *Research strategies.* 10(Summer):138-142.

Gray, S.M. 2000. Virtual reference services: directions and agendas. *Reference & user services quarterly.* 39(4):365-375.

Hale, M.L. 1991. Getting ready for tomorrow - or today. *Reference services review.* 19(Spring):74-76.

Harmsen, B. 2000. Adding value to Web-OPACs. *Electronic library.* 18(2):109-113.

Hathorn, C. 1997. The librarian is dead, long live the librarian. *Pretext*. [Online]. Available : http://www.pretext.com/oct97/features/story4.html [1998, September 9].

Herholdt, A. De V. 1987. Online bibliographic information retrieval in South Africa. [M.Bibl. thesis]. University of the Witwatersrand. (Unpublished).

Howards, E.H. & Jankowski, T.A. 1986. Reference services via electronic mail. *Bulletin of the Medical Library Association.* 74(1):41-44.

Hruska, M. 1995. Remote Internet serials in the OPAC? *Serial review.* 21(4):68. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2000, May 29].

Janes, J., Carter, D. & Memmott, P. 1999. Digital reference services in academic libraries. *Reference & user services quarterly.* 39(2):145-150.

Jascó, P. 1997. CD-ROM. In *International encyclopedia of information and library science*. Edited by J. Feather & P. Sturges. London: Routledge. 51-53.

Johnston, A. & Nicolle, J. 2000. Personalizing the library: the portal development project at the University of Canterbury Library. *Conference of the Library and Information Association of New Zealand and Aotearoa: Exceeding expectation.* 15-18 October, Christchurch, New Zealand. [Online]. Available: http://www.conference.co.za/LAINZA2000/PaperJohnston.pdf [2002, June 8].

Kalin, S. & Wright, C. 1994. Internexus: a partnership for Internet instruction. In *Librarians on the Internet: impact on reference services.* Edited by R. Kinder. New York: Haworth. 197-209.

Keenan, S. 1996. Concise dictionary of library and information science. London: Bowker Saur.

Klopper, S.M. 1999. Finding a new search rhythm. *Online.* 23(5):38-41. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2000, June 17].

Kyrillidou, M. 2000. Perspectives on …research library trends: ARL statistics. *Journal of academic librarianship.* 26(6):427-437. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2001, July 7].

Leiner, B.M. et al. 1998. *A brief history of the Internet.* [Online]. Available: http://www.isoc.org/internet/history/brief.html [1998, September 14].

Maloney, J. 1986. Online information services. In *ALA World encyclopedia of Library and Information Science.* 2nd ed. Chicago: ALA.

Mayfield, K. 2000. Ask a librarian, not Jeeves. *Wired news.* [Online]. Available: http://www.wired.com/news/culture/0,1294,40308,00.html [2002, May 25].

McDermott, I.E. 2000. Internet instruction: spreading the Web. *Searcher.* 8(7):72. [Online]. Available Academic Search Premier, EbscoHost at http://search.epnet.com [2002, March 26].

Mickey, B. 1999. A web search trifecta. *Online.* 23(3):79-82.

Mood, T.A. 1994. Of sundials and digital watches: a further step toward the new paradigm of reference. *Reference services review.* 22(Fall):27-95.

Morville, P.S. & Wickhorst, S.J. 1996. Building subject-specific guides to Internet resources. *Internet research: electronic networking applications and policy.* 6(4):27-32.

Murphy, C. 1998. The online catalog on the way to the millennium. *Multimedia schools.* 5(3):20-24. [Online]. Available: MasterFILE PREMIER, EbscoHost at http://search.epnet.com [2000, May 29].

Nelson, M.L. 2001. Integrated access to library resources. *Online.* 25(2):48-53.

Newton, R. et al. 1998. Using the Internet to support lifelong learning: the role of the librarian. *The challenge to be relevant in the 21st century: 19th IATUL conference*. 1-5 June, University of Pretoria, South Africa [Online]. Available : http://educate.lib.chalmers.se/IATUL/proceedcontents/pretpap/newton.html [1998, September 14].

Nicholas, D & Fenton, D. 1997. The Internet and the changing information environment. *Managing information.* 4(1/2):29-32.

Nicholls, P. 1998. Even the holy grail cannot accommodate multimedia. [Editorial: CD/DVD Librarian] *Computers in libraries.* 18 (9):54.

Nicholls, P. 1999. Are we throwing out the baby with the bath water? [Editorial: CD/DVD Librarian] *Computers in libraries.* 19(8):69.

Notess, G.R. 1998. The year databases moved to the web. *Database magazine.* 21(6):56-58. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2000, June 17].

Notess, G.R. 1999a. Minimal intranets for libraries. *Online.* 23(1):74-76.

Notess, G.R. 1999b. Rising relevance in search engines. *Online.* 23(3):84-86.

Oder, N. 2001. The shape of e-reference. *Library journal.* 126(2):46-50.

Ojala, M. 1999. The end of online as we know it. *Database magazine.* 22(6):6. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2000, June 17].

Parsons, A.M. 2001. Digital reference: how libraries can compete with Aska services. *Digital Library Federation newsletter.* 2(1). [Online]. Available at http://www.diglib.org/pubs/news02_01/RefBenchmark.htm [2002, March 26].

Pask, J.M. & Snow, C.E. Undergraduate instruction and the Internet. *Library trends*. 44(2):306-317. [Online]. Available: Infotrac at http://infotrac.london.galegroup.com [2001, November 12].

Peterson, E. & Lowry, C.B. 1995. Management decisions – beyond the OPAC. *Journal of academic librarianship.* 21(1):43-45. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2000, May 29].

Pollitz, J.H. 1994. Internet resources: opportunity knocks at our door. In *Librarians on the Internet: impact on reference services.* Edited by R. Kinder. New York: Haworth. 127-137.

Powell, C.A. & Bradigan, P.S. 2001. E-mail reference services: characteristics and effects on overall reference services at an academic health sciences library. *Reference & user services quarterly.* 41(2):170-178.

Powell, R.R. 1991. *Basic research methods for librarians.* 2nd ed. Norwood, N.J.: Ablex.

Pretorius, C. 1996. The costs of CD-ROM technology: can we afford it? *Innovation.* 13(December):28-30.

Price, G. 2001. *The almost invisible Web: potential solutions.* [Online]. Available: http://websearch.about.com/library/weekly/aa091800b.htm [2001, October 27].

Rasodi, M.A.M. 2000. An assessment of the use of electronic sources in reference librarianship. [M.Bibl. thesis]. University of South Africa. (Incomplete).

Rettig, J.R. 1986. Reference and information services. In *ALA world encyclopedia of library and information services.* 2nd ed. Chicago: American Library Association.

Ritch, A. 1991. Back to the future: from desk set to desklessness? *Reference services review.* 19(Spring):74-76.

Royal Melbourne Institute of Technology University. 1999. *IT strategies for learners.* [Online]. Available: http://www.its.tmit.edu.au/corporate/it_strategic_plan/strategies_for_learners.html [2002, May 28].

Saeed, H. et al. 2000. Internet use in university libraries of Pakistan. *Online information review*. 24(2):154-160.

Schaefer, D.R. & Dillman, D.A. 1998. Development of a standard e-mail methodology: results of an experiment. *Public opinion quarterly*. 62(3):378-397.

Schneider, K.G. 2000. My patron wrote me a letter: the joy of e-mail reference. *American libraries*. 31(1):96.

Shannon, D.M. & Bradshaw, C.C. 2002. A comparison of response rate, response time, and costs of mail and electronic surveys. *Journal of experimental education.* 70(2):179-192.

Sheehan, K.B. & McMillan, S.J. 1999. Response variation in e-mail surveys: an exploration. *Journal of advertising research.* 39(4):45-54.

Sherman, C. 1999. The future of web search. *Online*. 23(3):54-61.

Silva, M. & Cartwright, G.F. 1994. The Internet and the reference librarians: a question of leadership. In *Librarians on the Internet: impact on reference services.* Edited by R. Kinder. New York: Haworth. 159-172.

Sloan, B. 1998. Electronic reference services: some suggested guidelines. *Reference & user services quarterly*. 38(1):77-81. [Online]. Available: http://www.lis.uiuc.edu/b~sloan/guide.html [2000, October 25].

Sloan, B. 2001. *Ready for reference: academic libraries offer live Web-based reference: evaluating system use.* [Online]. Available: http://alexia.lis.uiiuc.edu/~b-sloan/r4r.final.htm [2002, May 21].

South Africa. Department of Arts, Culture, Science and Technology. 1996. The Information Society and the developing world: a South African approach. *Information Society and Development Conference (ISAD).* 13-15May, Gallagher Estate, Midrand. [Online]. Available: http://www.csir.co.za/isad.html [1997, March 26].

South Africa. Department of Education & Department of Communication. 2002. *Strategy for information and communication technology in education.* [Online]. Available: http://education.pwv.gov.za/teli2/ICT_strategy.htm [2002, June 8].

South Africa. Department of Education. 1999. *Department of Education/European Union higher education libraries programme.* [Online]. Available: http://education.pwv.gov.za/EU/default.htm [2002, May 2].

South Africa. Department of Education. 2001. *The restructuring of the higher education system in South Africa: report of the National Working Group to the Minister Education: issues and recommendations.* [Online]. Available: http://education.pwv.gov.za/Policies_and_Reports/2001_Report/RestructuringHE.htm [2002, June 8].

Stormont, S. 2001. Going where the users are: live digital reference. *Information technology & libraries.* 20(3):129-149.

Stover, M. 2000. Reference librarians and the Internet: a qualitative study. *Reference services review.* 28(1):39-46.

Sturges, P. 1997. Subject librarian. In *International encyclopedia of information and library science.* Edited by J. Feather & P. Sturges. London: Routledge.

Sullivan, D. 1999. Crawling under the hood: an update on search engine technology. *Online.* 23(3):30-36.

Swanepoel, M. 1989. Die beskikbaarheid van elektroniese brondatabasisse by Suid Afrikaanse universiteite en technikons. [M.Bibl. thesis]. University of Pretoria. (Unpublished).

Tenopir, C. 1989. What's happening with CD-ROM, part 1. *Library journal.* 114(2):50-51.

Tenopir, C. 1998. Online databases: Will online vendors survive. *Library journal.* 123(2):35-36. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2000, June 17].

Tenopir, C. 1999. Electronic reference and reference librarians: a look through the 1990's. *Reference services review*. 27(3):276-279.

Tenopir, C. 2000. Getting what you pay for. *Library journal.* 125(2):34-35. [Online]. Available: Academic Search Elite, EbscoHost at http://search.epnet.com [2001, June 17].

Tenopir, C. 2001. Virtual reference in the real world. *Library journal.* 126(12):38.

Tenopir, C. & Barry, J. 1999. Data dealers forging links. *Library journal.* 124(9):40-48.

Tenopir, C & Ennis, L. 1998a. The digital reference world of academic libraries. *Online*. 22(4). [Online]. Available: http://wwwonlineinc.com/onlinemag/OL1998/tenopir7.html [2000, October 13].

Tenopir, C. & Ennis, L. 1998b. The impact of digital reference on reference librarians. *Online*. 22(6). [Online]. Available: http://wwwonlineinc.com/onlinemag/OL1998/tenopir11.html [2000, October 13].

Tenopir, C. & Ennis, L. A. 2001. Reference services in the new millennium. *Online*. 25(4);41-45.

Tenopir, C. & Neufang, R. 1992a. Electronic reference options: how they stack up in research libraries. *Online*. 16(2):22-29.

Tenopir, C. & Neufang, R. 1992b. The impact of electronic reference on reference librarians. *Online*. 16(3):54-60.

Tenopir, C. & Neufang, R. 1995a. Electronic reference tracking the changes. *Online*. 19(4). [Online]. Available: http://wwwonlineinc.com/onlinemag/OL1995/JulOL95/tenopir-neufang.html [1998, September 26].

Tenopir, C. & Neufang, R. 1995b. Internet use and training in university libraries. *16th National Online Meeting Proceedings.*, 2-4 May, New York . Edited by M.E. Williams. Medford, N.J.: Learned Information. 387-393.

Thomsen, E. 1999. *Rethinking reference: the reference librarians' practical guide for surviving constant change.* New York: Neal - Schuman.

Tseng, G. 1997. Online and CD-ROM databases. In *International encyclopedia of information and library science*. Edited by J. Feather & P. Sturges. London: Routledge. 328-330.

Union of Students in Ireland. 2001. *One computer for every 33 students as universities fails to reach target.* [Online]. Available: http://www.usi.ie/news/computers24sept.htm [2002, March 28].

Van Brakel, P.A. 1993. Implications of networking CD-ROM databases in a research environment. *South African journal of library and information science.* 61(1):28-33

Van Brakel, P.A. 1997. Online database vendors: will they transform to pull technology? *South African journal of library and information science.* 65(4):234-242.

Viggiano, R. & Ault, M. 2001. Online library instruction for online students. *Information technology and libraries.* 20(3):135-138.

Vishwanatham, R., Wilkins, W. & Jevec, T. 1997. The Internet as a medium for online instruction. *College & research libraries.* 58(8):434-444.

Weaver, A.E. 2000. Personal Web pages as professional activities: an exploratory study. *Reference services review*. 28(2):171-177.

Weaver, M. 1996 The globalization of online services: the online searcher as facilitator. *Managing information*. 3(11):32-33.

What is CDRS? 2002. *Collaborative Digital Reference Service*. [Online]. Available: http://www.loc.gov/rr/digiref/about.html [2002, May 28].

Whatis.com: the IT-specific encyclopedia: a techtarget.com community. 1999. [Online]. Available: http:///www.whatis.com [2000, June 17].

White, H.S. 1995 Information intermediation: a fancy name for reference work. *Library Journal*. 120(5):44-45.

Wiese, F. O. & Borgendale, M. 1986. EARS: electronic access to reference services. *Bulletin of the Medical Library Association.* 74(1):300-304.

World Wide Web Consortium. 2002. *HyperText Markup Language (HTML) Home page.* [Online]. Available: http://www.w3.org/MarkUp [2002, July 5].

Appendix A1

Internet Survey

This questionnaire forms part of my Master's research on the availability and use of the Internet in reference services in academic librarians. The results of this study would, no doubt, be of great benefit to all libraries in South Africa. The questionnaire should, ideally, be completed by the head/s of reference/information services of the academic libraries.

Section A. General information.

1. Name of your institution.

2. How many user terminals / workstations are there in your library? (including all branches, satellites etc.)

☐ 1-10	☐ 11-20
☐ 21-30	☐ 31-40
☐ 41-50	☐ 51/more

3. How many libraries / branches does your service consist of?

☐ 1 only	☐ 2-5
☐ 6-10	☐ 11-15
☐ 16-20	☐ 21/more

4. How many Full Time Equivalent (FTE) students does your library provide a service to?

☐ Under 5 000	☐ 5 000 - 9 999
☐ 10 000 - 19 999	☐ 20 000 - 29 000
☐ More that 30 000	

5. How many reference librarians are there in your library? (including all branches satellites etc.)

☐ 1-5	☐ 6-10

☐ 11-15	☐ 16-20
☐ 21/more	

Section B.

Please answer the following questions regarding use of the Internet by your users.

6. Does your library offer access to the Internet to your users? Please also indicate how users access the Internet in your library.	
☐ No	☐ Yes (Tick all that apply)
	☐ Via OPACS
	☐ Dedicated terminals
	☐ Computer room in the library
	☐ Via librarians
	☐ Other (please specify)

If yes please continue with question 7. If no, please continue with Section C.

7. Who has access to the Internet in your library, and is it free or do they pay for access? (Please tick all that apply).		
☐ Undergraduate students	☐ Free	☐ Pay
☐ Graduate students	☐ Free	☐ Pay
☐ Academic staff	☐ Free	☐ Pay
☐ Support staff	☐ Free	☐ Pay
☐ Alumni	☐ Free	☐ Pay
☐ Community users	☐ Free	☐ Pay
Other (please specify)	☐ Free	☐ Pay

offer Internet access?		
☐ 1-10	☐ 11-20	☐ 21-30
☐ 31-40	☐ 41-50	☐ 51/more

9. Are the user terminal/workstations mostly?	
☐ Clustered together	☐ Decentralised (dispersed throughout your library)

10. Do you offer Internet training for on site users?	
☐ No	☐ Yes (Tick all that apply)
	☐ Printed guides
	☐ One-on-one instruction
	☐ Group instruction (part of library instruction)
	☐ Computer assisted instruction
	☐ Group instruction (special interest classes)
	☐ Video
	Other (please specify)

11. Do you offer Internet training for remote users (users who are not physically on campus)?	
☐ No	☐ Yes (Tick all that apply)
	☐ Printed guides
	☐ One-on-one instruction e.g. telephone
	☐ Via email or online
	☐ Computer assisted instruction
	☐ Group instruction (special interest classes)
	☐ Video
	Other (please specify)

12. Do your users download information from the Internet in your library?

☐ No	☐ Yes (Tick all that apply)
	☐ Save to disk
	☐ Print
	Other (please specify)

13. How long has your library offered Internet access to your users?

☐ Less than 1 yr	☐ 1-3 yrs	☐ 4-6 yrs
☐ 7-9 yrs	☐ 10 yrs	☐ 11/more

14. Are there any further comments about user access, training and use of the Internet in you library that you would like to add?

Section C.

Please answer the following questions regarding use of the Internet by your reference librarians.

15. How long have your reference librarians had access to the Internet?

☐ Do not have	☐ Less than 1 yr	☐ 1-3 yrs
☐ 4-6 yrs	☐ 7-9 yrs	☐ 10 yrs
☐ 11 yrs/more		

16. Do your reference librarians use the Internet for reference work?

☐ No	☐ Yes (Tick all that apply)
	☐ Ready reference (on site)

	☐ Email reference
	Other (please specify)

17. How many email reference queries fo your reference librarians receive per day?		
☐ Do not offer such service	☐ Less than 1	☐ 1-5
☐ 6-10	☐ 11-15	☐ 16-20
☐ 21/more		

18. How many email reference queries do your reference librarians answer per day?		
☐ Do not offer such service	☐ Less than 1	☐ 1-5
☐ 6-10	☐ 11-15	☐ 16-20
☐ 21/more		

19. How often do your reference librarians use the Internet (excluding Web OPAC and subscription databases) for reference queries daily?						
☐ Do not use	☐ Less than 1	☐ 1-5	☐ 6-10	☐ 11-15	☐ 16-20	☐ 21/more

20. How many users ask for assistance with using the Internet (excluding Web OPAC and subscription databases) daily?						
☐ Do not use	☐ Less than 1	☐ 1-5	☐ 6-10	☐ 11-15	☐ 16-20	☐ 21/more

21. What sort of training did your reference librarians have on the Internet (excluding Web OPAC and subscription databases)? Tick all that apply.	
☐ Formal workshop/course	☐ Colleagues
☐ Self-taught	Other (please specify)

22. Are there any comments about your reference librarian's

like to add?

Section D.

Please answer the following section regarding your Library Web site.

23. Does your library have a Web site?

- No
- Yes

If your answer is "no " please continue with Section D.

24. Is your library catalogue accessible from your Library Web site?

- No
- Yes

25. Are the online databases that your Library subscribes to accessible from your Library Web site?

- No
- Yes

26. Do your reference librarians have individual pages on your Library Web site?

- No
- Yes

27. Do your reference librarians update and maintain their own pages?

- No
- Yes

If your answer is "no", please continue with question 29.

28. If your answer to question 27 is yes, how often do the reference librarians update their pages and how many hours do they spend doing this?

- Daily

	Do not	0-1	1-5	6-10	11-15	16-20	21/more
Weekly	Do not	0-1	1-5	6-10	11-15	16-20	21/more
Monthly	Do not	0-1	1-5	6-10	11-15	16-20	21/more
Other: Please specify	Do not	0-1	1-5	6-10	11-15	16-20	21/more

29. Does your Web site generate reference queries, if so how many per day?

No	Yes
	Less than 1
	1-5
	6-10
	11-15
	16-20
	21/more

30. Who designed the Library Web site? (Title or position of the person/s)

31. Who is responsible for the maintenance (troubleshooting IT problems, etc) of the Library Web site? (Title or position of the person/s)

32. Who is responsible for the updating (adding and removing information, etc.) of the Library Web site? (Title or position of the person/s)

33. How often is the Library Web site updated?

34. Are there any comments about your Library Web site that

Section E.

Please answer the following questions with regarding your library OPAC and subscription databases.

☐ Proquest	☐ Telnet	☐ CDROM	☐ Web
Others: (please specify)	☐ Telnet	☐ CDROM	☐ Web

36. Which of these databases do you offer as an intermediary service (where a librarian does the online search for the user) and which do you offer as an end user online service (where the user does the searches)? Please tick all that apply.

☐ SABINET	☐ Intermediary	☐ End user
☐ NISC	☐ Intermediary	☐ End user
☐ Wilson	☐ Intermediary	☐ End user
☐ Dialog	☐ Intermediary	☐ End user
☐ JutaStat	☐ Intermediary	☐ End user
☐ Nexus	☐ Intermediary	☐ End user
☐ FirstSearch	☐ Intermediary	☐ End user
☐ UnCover	☐ Intermediary	☐ End user
☐ EBSCOHost	☐ Intermediary	☐ End user
☐ Swetsnet	☐ Intermediary	☐ End user
☐ MCB Emerald	☐ Intermediary	☐ End user
☐ Factiva	☐ Intermediary	☐ End user
☐ Gale (Infotrac)	☐ Intermediary	☐ End user
☐ Ovid	☐ Intermediary	☐ End user
☐ Proquest	☐ Intermediary	☐ End user
Others: (please specify)	☐ Intermediary	☐ End user

37. How often do the users access the Web version of the Library OPAC, on a daily basis?

☐ No Web version	☐ Less than 1	☐ 1-5	☐ 6-10

☐ 11-15	☐ 16-20	☐ 21/more	☐ Do not collect such data

38. How many users ask for assistance with using the Web version of the Library OPAC on a daily basis?			
☐ No Web version	☐ Less than 1	☐ 1-5	☐ 6-10
☐ 11-15	☐ 16-20	☐ 21/more	☐ Do not collect such data

39. How often do the reference librarians access the Web version of the Library OPAC on a daily basis?			
☐ No Web version	☐ Less than 1	☐ 1-5	☐ 6-10
☐ 11-15	☐ 16-20	☐ 21/more	☐ Do not collect such data

40. How often do the users access the Web version of the online databases, on a daily basis?			
☐ No Web version	☐ Less than 1	☐ 1-5	☐ 6-10
☐ 11-15	☐ 16-20	☐ 21/more	☐ Do not collect such data

41. How many users ask for assistance with using the Web version of the online databases on a daily basis?			
☐ No Web version	☐ Less than 1	☐ 1-5	☐ 6-10
☐ 11-15	☐ 16-20	☐ 21/more	☐ Do not collect such data

42. How often do the reference librarians access the Web version of the online databases on a daily basis?			
☐ No Web version	☐ Less than 1	☐ 1-5	☐ 6-10

11-15	16-20	21/more	Do not collect such data

43. Are there any comments about the databases, their access and use that you would like to add?

Section F.

Please comment on how your library's use of electronic reference resources has changed over the past 3-6 years and how the job of the reference staff has changed. I would also be especially interested in the impact of the Internet on reference, user instruction and other electronic reference tools.

Thank you very much for taking the time to complete this questionnaire!

Submit Reset

If you would prefer to download a Word document, complete and email or fax it to me, please **click here**

If you would prefer to download a Notepad document, complete and email or fax it to me, please **click here**

Contact Details
Fatima Darries
Information Librarian
Cape Technikon Library Services
Tel. (021) 460 3320

Fax. (021) 460 3699
email: fatima@ctech.ac.za

Top of Page

Appendix A2

Internet Survey

The questionnaire forms part of my Master's research on the availability and use of the Internet in reference services in academic libraries in South Africa. The results of the study would, no doubt be of benefit to all libraries in South Africa. The questionnaire should, ideally, be completed by the head/s of reference/information services of the academic libraries.

Section A. General information.

1. Name of your institution.

   _____

2. How many user terminals/workstations are there in your library (including all branches, satellites etc.)?

1-10 11-20 21-30 31-40 41-50 51/more

3. How many libraries/branches does your service consist of?

1 only 2-5 6-10 11-15 16 - 20 21/more

4. How many Full Time Equivalent (FTE) students does your library provide a service to?

Under 5000 5 000- 9 999 10 000 - 19 999 20 000- 29 000 More that 30 000

5. How many reference librarians are there in your library (including all branches satellites etc.)?

1 -5 6-10 11-15 16-20 21/more

Section B. Please answer the following questions regarding use of the Internet by your users.

6. Does your library offer access to the Internet to your users? Please also indicate how users access the Internet in your library.

No
Yes (Please tick all that apply.)
Via OPACS
Dedicated terminals
Computer room in the library
Via librarians
Other (please specify) _____

If yes please continue with question 7. If no, please continue with Section C.

7. Who has access to the Internet in your library, and is it free or do they pay for access? (Please tick all that apply).

Undergraduate students	Free	Pay
Graduate students	Free	Pay
Academic staff	Free	Pay
Support staff	Free	Pay
Alumni	Free	Pay
Community users	Free	Pay
Other (please specify): _____	Free	Pay

8. In your library how many user terminals/workstations offer Internet access?

1-10 11-20 21-30
31-40 41-50 51/more

---

9. Are the user terminal/workstations mostly?

Clustered together Decentralised (dispersed throughout your library)

10. Do you offer Internet training for on site users?

No Yes (Tick all that apply)
- Printed guides
- One -on -one instruction
- Group instruction (part of library instruction)
- Computer assisted instruction
- Group instruction (special interest classes)
- Video
- Other (please specify) _____

11. Do you offer Internet training for remote users (users who are not physically on campus)?

No Yes (Tick all that apply)
- Printed guides
- One -on -one instruction e.g. telephone
- Via email or online
- Computer assisted instruction
- Group instruction (special interest classes)
- Video
- Other (please specify) _____

12. Do your users download information from the Internet in your library?

No Yes (Tick all that apply)
- Save to disk
- Print
- Other (please specify _____

13. How long has your library offered Internet access to your users?

Less than 1yr 1-3 yrs 4 -6 yrs 7-9 yrs 10 yrs 11yrs/more

14. Are there any further comments about user access, training and use of the Internet in you library that you would like to add?

_____

_____

_____

Section C. Please answer the following questions regarding use of the Internet by your reference librarians.

15. How long have your reference librarians had access to the Internet?

Do not have Less than 1yr 1-3 yrs 4 -6 yrs 7-9 yrs 10 yrs 11 yrs/more

16. Do your reference librarians use the Internet for reference work?

No Yes (Tick all that apply)
- Ready reference (on site)
- Email reference
- Other (please specify) _____

17. How many email reference queries do your reference librarians receive per day?

Do not offer such service Less than 1 1-5 6-10 11-15 16-20 21/more

18. How many email reference queries do your reference librarians answer per day?

Do not offer such service Less than 1 1-5 6-10 11-15 16-20 21/more

19. How often do your reference librarians use the Internet (excluding Web OPAC and subscription databases) for reference queries daily? Please tick all that apply.

Do not use Less than 1 1-5 6-10 11-15 16-20 21/more

20. How many users ask for assistance with using the Internet (excluding Web OPAC and subscription databases) daily?

Do not use Less than 1 1-5 6-10 11-15 16-20 21/more

21. What sort of training did your reference librarians have on the Internet (excluding Web OPAC and subscription databases)? Tick all that apply.

Formal workshop/course Colleagues
Self-taught Other (please specify) _____

22. Are there any comments about your reference librarian's use and training of the Internet in your library that you would like to add?

_____

_____

_____

Section D. Please answer the following section regarding your Library Web site.

23. Does your library have a Web site?

No Yes

If your answer is "no ", please continue with Section D.

24. Is your library catalogue accessible from your Library Web site?

No Yes

25. Are the online databases that your Library subscribes to accessible from your Library Web site?

No Yes

26. Do your reference librarians have individual pages on your Library Web site?

No Yes

27. Do your reference librarians update and maintain their own pages?

No Yes

If your answer is 'no', please continue with question 29.

28. If your answer to question 27 is yes, how often do the reference librarians update their pages and how many hours do they spend doing this?

Daily	Do not	0-1	1-5	6-10	11-15	16-20	21/more
Weekly	Do not	0-1	1-5	6-10	11-15	16-20	21/more
Monthly	Do not	0-1	1-5	6-10	11-15	16-20	21/more
Other: Please specify. _____	Do not	0-1	1-5	6-10	11-15	16-20	21/more

29. Does your Web site generate reference queries, if so how many per day?

No
Yes
Less than 1
1-5
6-10
11-15
16-20
21/more
Do not collect such data

---

30. Who designed the Library Web site? (Title or position of person/s)

_____

31. Who is responsible for the maintenance (troubleshooting IT problems, etc) of the Library Web site? (Title or position of the person/s)

_____

32. Who is responsible for the updating (adding and removing information, etc.) of the Library Web site? (Title or position of the person/s)

_____

33. How often is the Library Web site updated?

_____

34. Are there any comments about your Library Web site that you would like to add?

_____

_____

_____

Section E. Please answer the following questions with regarding your library OPAC and subscription databases.

35. Which online services does your library provide access to? Please also tick the methods of access.

OPAC	Telnet	CDROM	Web
SABINET	Telnet	CDROM	Web
NISC	Telnet	CDROM	Web
Wilson	Telnet	CDROM	Web
Dialog	Telnet	CDROM	Web
JutaStat	Telnet	CDROM	Web
Nexus	Telnet	CDROM	Web
FirstSearch	Telnet	CDROM	Web
UnCover	Telnet	CDROM	Web
EBSCOHost	Telnet	CDROM	Web
Swetsnet	Telnet	CDROM	Web
MCB Emerald	Telnet	CDROM	Web
Factiva	Telnet	CDROM	Web
Gale (Infotrac)	Telnet	CDROM	Web
Ovid	Telnet	CDROM	Web
Proquest	Telnet	CDROM	Web
Others: (please specify)	Telnet	CDROM	Web

36. Which of these databases do you offer as an intermediary service (where a librarian does the online search for the user) and which do you offer as an end user online service (where the user does the searches)? Please tick all that apply.

SABINET	Intermediary	End user
NISC	Intermediary	End user
Wilson	Intermediary	End user
Dialog	Intermediary	End user
JutaStat	Intermediary	End user
Nexus	Intermediary	End user
FirstSearch	Intermediary	End user

UnCover	Intermediary	End user
EBSCOHost	Intermediary	End user
Swetsnet	Intermediary	End user
MCB Emerald	Intermediary	End user
Factiva	Intermediary	End user
Gale (Infotrac)	Intermediary	End user
Ovid	Intermediary	End user
Proquest	Intermediary	End user
Others: (please specify)	Intermediary	End user

37. How often do the users access the Web version of the Library OPAC, on a daily basis?

No Web version | Less than 1 | 1-5 | 6-10 | 11-15 | 16-20 | 21/more | Do not collect such data

38. How many users ask for assistance with using the Web version of the Library OPAC on a daily basis?

No Web version | Less than 1 | 1-5 | 6-10 | 11-15 | 16-20 | 21/more | Do not collect such data

39. How often do the reference librarians access the Web version of the Library OPAC on a daily basis?

No Web version | Less than 1 | 1-5 | 6-10 | 11-15 | 16-20 | 21/more | Do not collect such data

40. How often do the users access the Web version of the online databases, on a daily basis?

Do not use | Less than 1 | 1-5 | 6-10 | 11-15 | 16-20 | 21/more | Do not collect such data

41. How many users ask for assistance with using the Web version of the online databases on a daily basis?

Do not use | Less than 1 | 1-5 | 6-10 | 11-15 | 16-20 | 21/more | Do not collect such data

42. How often do the reference librarians access the Web version of the online databases on a daily basis?

Do not use | Less than 1 | 1-5 | 6-10 | 11-15 | 16-20 | 21/more | Do not collect such data

43. Are there any comments about the databases, their access and use that you would like to add?

_____

_____

_____

Section F. **Please comment on how your library's use of electronic reference resources has changed over the past 3-6 years and how the job of the reference staff has changed. I would also be especially interested in the impact of the Internet on reference, user instruction and other electronic reference tools.**

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you very much for taking the time to complete this questionnaire!
Fatima Darries
Tel. (021) 460 3320 (w)
Fax. (021) 460 3699
Email: Fatima@ctech.ac.za

Appendix A3

Internet Survey

This questionnaire forms part of my Master's research on the availability and use of the Internet in reference services in academic librarians. The results of this study would, no doubt, be of great benefit to all libraries in South Africa. The questionnaire should, ideally, be completed by the head/s of reference/information services of the academic libraries.

Section A. General information.

1. Name of your institution.

2. How many user terminals/workstations are there in your library (including all branches, satellites etc.)?

1-10

11-20

21-30

31-40

41-50

51/more

3. How many libraries/branches does your service consist of?

1 only

2-5

6-10

11-15

16 - 20

21/more

4. How many Full Time Equivalent (FTE) students does your library provide a service to?

Under 5000

5 000- 9 999

10 000 - 19 999

20 000- 29 000

More that 30 000

5. How many reference librarians are there in your library (including all branches satellites etc.)?

1 -5

6-10

11-15

16-20

21/more

Section B. Please answer the following questions regarding use of the Internet by your users.

6. Does your library offer access to the Internet to your users? Please also indicate how users access the Internet in your library.

No

Yes (Please tick all that apply.)

Via OPACS

Dedicated terminals

Computer room in the library

Via librarians

Other (please specify)

If yes please continue with question 7. If no, please continue with Section C.

7. Who has access to the Internet in your library, and is it free or do they pay for access? (Please tick all that apply).

Undergraduate students

Free

Pay

Graduate students

Free

Pay

Academic staff

Free

Pay

Support staff

Free

Pay

Alumni

Free

Pay

Community users

Free

Pay

Other (please specify):

Free

Pay

8. In your library how many user terminals/workstations offer Internet access?

1-10

11-20

21-30

31-40

41-50

51/more

9. Are the user terminal/workstations mostly?

Clustered together

Decentralised (dispersed throughout your library)

10. Do you offer Internet training for on site users?

No

Yes (Tick all that apply)

Printed guides

One -on -one instruction

Group instruction (part of library instruction)

Computer assisted instruction

Group instruction (special interest classes)

Video

Other (please specify)

11. Do you offer Internet training for remote users (users who are not physically on campus)?

No

Yes (Tick all that apply)

Printed guides

One -on -one instruction e.g. telephone

Via email or online

Computer assisted instruction

Group instruction (special interest classes)

Video

Other (please specify)

12. Do your users download information from the Internet in your library?

No

Yes (Tick all that apply)

Save to disk

Print

Other (please specify

13. How long has your library offered Internet access to your users?

Less than 1yr

1-3 yrs

4 -6 yrs

7-9 yrs

10 yrs

11yrs/more

14. Are there any further comments about user access, training and use of the Internet in you library that you would like to add?

Section C. Please answer the following questions regarding use of the Internet by your reference librarians.

15. How long have your reference librarians had access to the Internet?

Do not have

Less than 1yr

1-3 yrs

4 -6 yrs

7-9 yrs

10 yrs

11 yrs/more

16. Do your reference librarians use the Internet for reference work?

No

Yes (Tick all that apply)

Ready reference (on site)

Email reference

Other (please specify)

17. How many email reference queries do your reference librarians receive per day?

Do not offer such service

Less than 1

1-5

6-10

11-15

16-20

21/more

18. How many email reference queries do your reference librarians answer per day?

Do not offer such service

Less than 1

1-5

6-10

11-15

16-20

21/more

19. How often do your reference librarians use the Internet (excluding Web OPAC and subscription databases) for reference queries daily? Please tick all that apply.

Do not use

Less than 1

1-5

6-10

11-15

16-20

21/more

20. How many users ask for assistance with using the Internet (excluding Web OPAC and subscription databases) daily?

Do not use

Less than 1

1-5

6-10

11-15

16-20

21/more

21. What sort of training did your reference librarians have on the Internet (excluding Web OPAC and subscription databases)? Tick all that apply.

Formal workshop/course

Colleagues

Self-taught

Other (please specify)

22. Are there any comments about your reference librarian's use and training of the Internet in your library that you would like to add?

Section D. Please answer the following section regarding your Library Web site.

23. Does your library have a Web site?

No

Yes

If your answer is "no " please continue with Section D.

24. Is your library catalogue accessible from your Library Web site?

No

Yes

25. Are the online databases that your Library subscribes to accessible from your Library Web site?

No

Yes

26. Do your reference librarians have individual pages on your Library Web site?

No

Yes

27. Do your reference librarians update and maintain their own pages?

No

Yes

If your answer is "no", please continue with question 29.

28. If your answer to question 27 is yes, how often do the reference librarians update their pages and how many hours do they spend doing this?

Daily

Do not

0-1

1-5

6-10

11-15

16-20

21/more

Weekly

Do not

0-1

1-5

6-10

11-15

16-20

21/more

Monthly

Do not

0-1

1-5

6-10

11-15

16-20

21/more

Other: Please specify.

Do not

0-1

1-5

6-10

11-15

16-20

21/more

29. Does your Web site generate reference queries, if so how many per day?

No

Yes

Less than 1

1-5

6-10

11-15

16-20

21/more

Do not collect such data

30. Who designed the Library Web site? (Title or position of the person/s)

31. Who is responsible for the maintenance (troubleshooting IT problems, etc) of the Library Web site? (Title or position of the person/s)

32. Who is responsible for the updating (adding and removing information, etc.) of the Library Web site? (Title or position of the person/s)

33. How often is the Library Web site updated?

34. Are there any comments about your Library Web site that you would like to add?

Section E. Please answer the following questions with regarding your library OPAC and subscription databases.

35. Which online services does your library provide access to? Please also tick the methods of access.

OPAC

Telnet

CDROM

Web

SABINET

Telnet

CDROM

Web

NISC

Telnet

CDROM

Web

Wilson

Telnet

CDROM

Web

Dialog

Telnet

CDROM

Web

JutaStat

Telnet

CDROM

Web

Nexus

Telnet

CDROM

Web

FirstSearch

Telnet

CDROM

Web

UnCover

Telnet

CDROM

Web

EBSCOHost

Telnet

CDROM

Web

Swetsnet

Telnet

CDROM

Web

MCB Emerald

Telnet

CDROM

Web

Factiva

Telnet

CDROM

Web

Gale (Infotrac)

Telnet

CDROM

Web

Ovid

Telnet

CDROM

Web

Proquest

Telnet

CDROM

Web

Others: (please specify)

Telnet

CDROM

Web

36. Which of these databases do you offer as an intermediary service (where a librarian does the online search for the user) and which do you offer as an end user online service (where the user does the searches)? Please tick all that apply.

SABINET

Intermediary

End user

NISC

Intermediary

End user

Wilson

Intermediary

End user

Dialog

Intermediary

End user

JutaStat

Intermediary

End user

Nexus

Intermediary

End user

FirstSearch

Intermediary

End user

UnCover

Intermediary

End user

EBSCOHost

Intermediary

End user

Swetsnet

Intermediary

End user

MCB Emerald

Intermediary

End user

Factiva

Intermediary

End user

Gale (Infotrac)

Intermediary

End user

Ovid

Intermediary

End user

Proquest

Intermediary

End user

Others: (please specify)

Intermediary

End user

37. How often do the users access the Web version of the Library OPAC, on a daily basis?

No Web version

Less than 1

1-5

6-10

11-15

16-20

21/more

Do not collect such data

38. How many users ask for assistance with using the Web version of the Library OPAC on a daily basis?

No Web version

Less than 1

1-5

6-10

11-15

16-20

21/more

Do not collect such data

39. How often do the reference librarians access the Web version of the Library OPAC on a daily basis?

No Web version

Less than 1

1-5

6-10

11-15

16-20

21/more

Do not collect such data

40. How often do the users access the Web version of the online databases, on a daily basis?

Do not use

Less than 1

1-5

6-10

11-15

16-20

21/more

Do not collect such data

41. How many users ask for assistance with using the Web version of the online databases on a daily basis?

No Web version

Less than 1

1-5

6-10

11-15

16-20

21/more

Do not collect such data

42. How often do the reference librarians access the Web version of the online databases on a daily basis?

Do not use

Less than 1

1-5

6-10

11-15

16-20

21/more

Do not collect such data

43. Are there any comments about the databases, their access and use that you would like to add?

Section F. Please comment on how your library's use of electronic reference resources has changed over the past 3-6 years and how the job of the reference staff has changed. I would also be especially interested in the impact of the Internet on reference, user instruction and other electronic reference tools.

Thank you very much for taking the time to complete this questionnaire!

Fatima Darries

Information Librarian

Cape Technikon Library Services

P.O. Box 652

CAPE TOWN

8000

Tel. (021) 460 3320

Fax. (021) 460 3699

Email: Fatima@ctech.ac.za

138

Appendix B1
Subject of e-mail: Internet Survey
Dear (name of addressee)

My name is Fatima Darries. I am a student at UCT's Department of Library and Information Science, conducting research for a Masters degree in LIS.

A major part of my research is a questionnaire survey of the use of the Internet in academic libraries, particularly by reference or subject librarians. In other words, librarians involved in information service provision. The questionnaire is posted to the heads or team leaders in information services provision at each of the academic libraries in South Africa.

Please take the time to fill out the questionnaire. Your contribution is of great value and importance. Take this opportunity to contribute to knowledge on this vital tool in libraries. The results of this study would, no doubt, be of great benefit to all libraries in South Africa.

The questionnaire is available at http://www.capewebdesign.co.za/library .

If you prefer, please complete either the attached MS Word document or the plain text document, and email or fax back to me by 30 November 2001.

I look forward to receiving information regarding the Internet in your library.

Many thanks!

Regards,

Fatima Darries
Email: fatima@ctech.ac.za
Phone: 021 460 3320
Fax: 021 460 3699
Address: P.O. Box 652
CAPE TOWN
8000

Appendix B2

Subject of e-mail: Internet survey

Dear (Name of addressee)

My name is Fatima Darries. I am a student at UCT's Department of Library and Information Science, conducting research on the use of the Internet in academic libraries in SA, for a Masters degree in LIS.

Mid November I sent an email regarding an Internet survey I am doing. The due date for the return of the questionnaire has passed but I would like to give you another opportunity to make your contribution.

The web site address is www.capewebdesign.co.za/library and I have attached the same questionnaire as MS Word and plain text document.

I am enormously interested in your response, so please do take the time to complete the questionnaire as soon as possible. (No later than Friday, 7 December 2001)

I look forward to receiving your response!

Regards,

Fatima Darries
Email: fatima@ctech.ac.za
Phone: 021 460 3320
Fax: 021 460 3699
Address: P.O. Box 652
CAPE TOWN
8000

Appendix C

Interview Schedule

In your library how many user terminals/workstations offer Internet access?

1.1 How long have your users had access to the Internet in your library?

1.2. How long have the librarians/ you had access to Internet in your library?

What are your users using the Internet for?
Email /sms, search engine searches, reference from lecturers, entertainment, assignments/academic purposes.

What do you use it for mostly?

6. Do you offer email reference? (receive or reply to reference queries via email)
Results of database searches, quick reference

6.1. Ho w often do you receive queries via email?
Do not use 1-5 6-10 11-15 16-20 21/more
6.4. How often do you answer reference queries via email?
Do not use 1-5 6-10 11-15 16-20 21/more

6.5. Does your library Web site?
What is you involvement in the Web site, if any?
What amount of time do you spend on it?

7. Has the introduction of the Internet changed the way your users do research?

7.1.Has it changed the way users interact with reference staff?

7.2. Have user demands increased/changed?

7.3. Has the introduction of the Internet changed the way you do research or approach a reference query?

Have you noticed any change (emotional, attitudinal, or cultural) among the reference service staff and the users of the library since the introduction of the Internet?

Do you have formal Internet training program for library staff. All staff?
Who does the training?
How and by whom is the training organised.
8.3. What training have you had on the Internet?

8.4. When did you receive Internet training? How long before or after you had access to the Internet?
8.5. What did your Internet training include? Email, search engines, subject gateways/portals, web design, html.

Do have confidence in your Internet searching ability?
Do you feel that you have enough skill and knowledge to search the Internet properly to answer reference queries.
Was there anything that your Internet training did not include that should have been included?

Do you have an Internet training program for users?
Is the Internet training integrated into regular library instruction?
Who does the Internet instruction?
What kind of training is most effective?
What kind of training do users seem to want?
What does the Internet training to your users include? Catalogue, subscription databases, email, search engines, subject gateways/portals, how to select relevant information

What do you see as the biggest benefit of Internet access for users?
12.1. What's been the biggest problem?

What do you see as the biggest benefit of Internet access for reference librarians?
12.1. What's been the biggest problem?

Any advice you would give to an academic reference librarian about offering Internet access in the public service area to users?

15.1. What do you think about the Internet and the information found on it?

15.2. Do you think the Internet is a useful/effective tool for finding information? How would you rate the Internet as an information finding tool? Are there areas that improvements can be made?

15.3. What has been the contribution, whether positive or negative, of the Internet on reference librarianship? What is the impact of the Internet on reference librarianship?

15.4. Do you think the use of the Internet has revitalised reference librarianship or do you think the Internet is a threat to it?

Appendix D1

Not available electronically**.**

Appendix D2

Questionnaire on the Internet

The questionnaire below forms part of my Master's research on the impact of the Internet on reference librarians. The questionnaire is posted to selected librarians at each of the academic libraries in South Africa.

Please fill out the questionnaire below as your contribution is of great value and importance. Take this opportunity to contribute to knowledge on this vital tool in libraries. The results of this study would, no doubt, be of great benefit to all libraries in South Africa.

Questionnaire

1. Name of your institution. (eg. University of Cape Town)
   _____

2. Does your library offer user access to the Internet?

No Yes

If yes please continue with question 2.1. If no, please continue with question 3.

2.1. Who has access to Internet and is it free or do they pay for access? (Please tick all that apply).

Undergraduate students	Free	Pay
Graduate students	Free	Pay
Academic staff	Free	Pay
Support staff	Free	Pay
Alumni	Free	Pay
Community users	Free	Pay
Other (please specify): _____	Free	Pay

2.2. How does your library offer access to the Internet? (Tick all that apply)

Via OPACS Dedicated terminals/workstations Computer room/Laboratory

Other (please specify) _____

2.3. What type of Internet access do you offer to your users ? (Tick all that apply)

Email World Wide Web Specific databases

Other (please specify) _____

2.4. In your library how many user terminals/workstations offer Internet access?

1-10	11-20	21-30
31-40	41-50	More than 50

2.5. Are the user terminal/workstations mostly?

Clustered together Decentralised (dispersed throughout your library)

2.6. Do you offer Internet training for on site users?

No Yes (Tick all that apply)
Printed guides
One -on -one instruction
Group instruction (part of registered library instruction)
Computer assisted instruction
Group instruction (special interest classes)
Video
Other (please specify) _____

2.7. Do you offer Internet training for remote users (users who are not physically on campus)?

No Yes (Tick all that apply)
Printed guides
One -on -one instruction e.g. telephone
Via email or online
Computer assisted instruction
Group instruction (special interest classes)
Video
Other (please specify) _____

2.8. Do your users download information from the Internet in your library? (Tick all that apply)

Save to disk Print
Other (please specify _____

2.9. How long has your library offered Internet access to your users?

Less than 1yr 1-3 yrs 4 -6 yrs 7-9 yrs 10 yrs More than 10 yrs

2.10.Are there any further comments about user access, training and use of the Internet in you library that you would like to add?

_____

_____

_____

3.1.How long have your reference librarians had access to the Internet?

Do not have Less than 1yr 1-3 yrs 4 -6 yrs 7-9 yrs 10 yrs More than 10 yrs

3.2.Do your reference librarians use the Internet for reference work?

No Yes (Tick all that apply)
Ready reference (on site)
Email reference

Other (please specify)_____

3.3.How often do your reference librarians use the Internet for reference queries daily?

Do not use	1-5	6-10	11-15	16-20	21/more

4. How many users ask for assistance with using the Internet daily?

Do not use	1-5	6-10	11-15	16-20	21/more

5. What sort of training did your reference librarians have on the Internet? Tick all that apply.

Formal workshop/course Colleagues
Self-taught Other (please specify)_____

6. Are there any comments about your reference librarian's use and training of the Internet in your library that you would like to add?

_____

_____

_____

7.1. Does your library have a Web site?
No Yes
If your answer is "no " please continue with question 8.

7.2. Is your library catalogue accessible from your Library Web site?
No Yes

7.3. Are the online databases that your Library subscribeS to accessible from your Library Web site?
No Yes

7.4. Do your reference librarians have individual pages on your Library Web site?
No Yes

7.5. Does your web site generate reference queries, if so how many per day?
No
Yes
Less than 1
1-5
6-10
11-15
16-20
21/more
Do not collect such data

7.6. Who is responsible for the maintenance of the Library Web site? (Title or position of the person)

_____

7.7. Who is responsible for the updating of the Library Web site? (Title or position of the person)

_____

7.8. How often is the Library Web site updated?

_____

7.9.Are there any comments about your Library Web site that you would like to add?

_____

_____

_____

8. Which online services does your library provide access to? Please also tick the methods of access.

OPAC	Telnet	CDROM	Web
SABINET	Telnet	CDROM	Web
NISC	Telnet	CDROM	Web
Wilson	Telnet	CDROM	Web
Dialog	Telnet	CDROM	Web
JutaStat	Telnet	CDROM	Web
Nexus	Telnet	CDROM	Web
FirstSearch	Telnet	CDROM	Web
UnCover	Telnet	CDROM	Web
EBSCOHost	Telnet	CDROM	Web
Swetsnet	Telnet	CDROM	Web
MCB Emerald	Telnet	CDROM	Web
Factiva	Telnet	CDROM	Web
Others: (please specify)	Telnet	CDROM	Web

8.1. How often do the users access the Web version of the online databases, on a daily basis?

Do not use	1-5	6-10	11-15	16-20	21/more	Do not collect such data

8.2. How often do the reference librarians access the Web version of the online databases on a daily basis?

Do not use	1-5	6-10	11-15	16-20	21/more	Do not collect such data

8.3. Which of these databases do you offer as an intermediary service (where a librarian does the online search for the user) and which do you offer as an end user online service (where the user does the searches)? Please tick all that apply.

SABINET	Intermediary	End user

NISC	Intermediary	End user
Wilson	Intermediary	End user
Dialog	Intermediary	End user
JutaStat	Intermediary	End user
Nexus	Intermediary	End user
FirstSearch	Intermediary	End user
UnCover	Intermediary	End user
EBSCOHost	Intermediary	End user
Swetsnet	Intermediary	End user
MCB Emerald	Intermediary	End user
Factiva	Intermediary	End user
Others: (please specify)	Intermediary	End user

8.4. Are there any comments about the databases, their access and use that you would like to add?

_____

_____

_____

9. How many user terminals/workstations are there in your library (including all branches, satellites etc.)?

1-10 11-20 21-30
31-40 41-50 More than 50

10. How many libraries/branches does your service consist of?

1 only 2-5 6-10 11-15 16 - 20 More than 20

11. How many Full Time Equivalent (FTE) students does your library provide a service to?

Under 5000 5 000- 9 999 10 000 - 19 999 20 000- 29 000
More that 30 000

12. How many reference librarians are there in your library (including all branches satellites etc.)?

1 -5 6-10 11-15 16-20 More than 20

13. Please comment on how your library's use of electronic reference services has changed over the past 2-3 years and how the job of the reference staff has changed. I would also be especially interested in the impact of the Internet on reference, user instruction and other electronic reference tools.

Thank you very much for taking the time to complete this questionnaire!
Fatima Darries
Information Librarian
Cape Technikon Library Services

Tel. (021) 460 3320
Fax. (021) 460 3699
Email: Fatima@ctech.ac.za

Appendix E

Pilot Interview Schedule

1. In your library how many user terminals/workstations offer Internet access?

1.2 How long have your users had access to the Internet in your library?
1.2. How long have the librarians/ you had access to Internet in your library?

2. Are they mostly clustered together or decentralized?

3. How often do you use the Internet for reference queries daily?

Do not use 1-5 6-10 11-15 16-20 21/more

4. How many users ask for assistance with using the Internet daily?

Do not use 1-5 6-10 11-15 16-20 21/more

5. What are your users using the Internet for?

Email /sms, search engine searches, reference from lecturers, entertainment, assignments/academic purposes.

6. What do you use it for mostly?

6.1. Do you offer email reference? (receive or reply to reference queries via email)
Results of database searches, quick reference
6.2. Ho w often do you receive queries via email?
Do not use 1-5 6-10 11-15 16-20 21/more
6.4. How often do you answer reference queries via email?
Do not use 1-5 6-10 11-15 16-20 21/more

7. Has the introduction of the Internet changed the way your users do research?

7.1.Has it changed the way users interact with reference staff?
7.2. Have user demands increased/changed?
7.3. Has the introduction of the Internet changed the way you do research or approach a reference query?

8. Do you have formal Internet training program for library staff. All staff?
    a. Who does the training?
    b. How and by whom is the training organised.

8.3. What training have you had on the Internet?

9. Do you have an Internet training program for users?
    a. Is the Internet training integrated into regular library instruction?
    b. Who does the Internet instruction?
    c. What kind of training is most effective?
    d. What kind of training do users seem to want?

10. Have you noticed any change (emotional, attitudinal, or cultural) among the reference service staff and the users of the library since the introduction of the Internet?

11. What do you see as the biggest benefit of Internet access for users?

11.1. What's been the biggest problem?

12. What do you see as the biggest benefit of Internet access for reference librarians?

12.1. What's been the biggest problem?

13. Any advice you would give to an academic reference librarian about offering Internet access in the public service area to users?

14. Do have confidence in your Internet searching ability?

a. Do you feel that you have enough skill and knowledge to search the Internet to Internet property to answer reference queries.

15. What do you think about the Internet and the information found on it?

15.1. What are the advantages in using the Internet in reference services?

15.2. What are the disadvantages in using the Internet in reference services?

15.3 . Do you think the Internet is a useful/effective tool for finding information?

7.4. Do you think the use of the Internet has revitalised reference services/reference librarianship?