

CHAPTER 6

TRENDS IN THE MEDIA USED IN ACADEMIC LIBRARY COLLECTIONS

6.1 INTRODUCTION

The previous two chapters dealt with the information needs of academics and researchers and with the ways in which they gather their information. Due to the information-centric nature of their activities, it was found that their information needs and information patterns are diverse and complex. They were found to use a range of information media which they access from a range of information-providing avenues. Developments in scholarly communication were also investigated because this is linked intimately to the information behaviour of scholars. Changes in scholarly communication have an ongoing impact on the development and management of library collections.

Having dealt with the need that academics and researchers experience for various kinds of information media, it is now necessary to evaluate how academic libraries should integrate these media into their collections. This is the purpose of this chapter. In order to come to a clear understanding of collection development and management, bibliographers and library managers require knowledge about the formats available today and of the options they have regarding the types of research collections they could consider in their libraries. The information resources industry is currently undergoing rapid change and will conceivably continue to change in the near future. It is thus crucial that the library of a newly established university of technology should take cognisance of current trends and develop its collection in accordance with these and with the altered information needs of its academics and researchers.

In a recent survey carried out by OCLC (2003:1) about media trends, it was reported:

Perhaps the most significant challenge is that the universe of materials that a library must assess, manage and disseminate is not simply shifting to a new set or type of materials, but rather building into a much more complex universe of new and old, commodity and unique, published and unpublished, physical and virtual.

OCLC (2003:1) found that libraries in the 21st century are:

... faced with the challenges of integrating traditional and emerging formats, balancing resource allocation between traditional and emerging technologies, and building new information management processes and procedures.

The two major categories into which information media may be divided are traditional media and electronic or digital media.

6.2 COLLECTION DEVELOPMENT ISSUES REGARDING TRADITIONAL MEDIA

It has become common practice to refer to print monographs, journals and indexes as well as audiovisual and microform material as traditional media. Also classified as traditional media are print bibliographies, theses and archives. Traditional media are largely paper-based (Coutts 1998:283). Users of such information can access the information without the use of a computer, as the information contained in the information sources is not in digital form. Users require equipment in the form of videocassette recorders or microform readers to access traditional media that are not available in paper form – i.e. video recordings and microform.

A benchmark study (Liu 2001:49) was undertaken to examine the relationship between library print collections and the prestige of the academic programmes at 300 universities in the USA. Findings confirmed that the number and quality of library volumes and serial subscriptions contribute significantly to the prestige of academic programmes at universities. The researcher concluded that cutting back on volumes and subscriptions will damage the quality of academic programmes in the long run. He also concluded that simply replacing ownership of print collections with electronic

access services could damage healthy scholarly communication, decrease the research productivity of scholars and eventually erode the quality of academic programmes. Print monographs and journals housed in the library can be accessed instantly (Liu 2001:51). It is found that the access model ignores the information-seeking patterns of scholars who prefer to browse. Another problem is that if every library relies on interlending services from other libraries, eventually collections will decrease to the extent that no libraries have materials requested by other libraries. Commercial document delivery services usually deal only with journal articles, not books (Liu 2001:51). Academic research libraries must have extensive collections to support their research orientation. They seek prestige by building robust collections of books and serials to support their teaching and research functions (Liu 2001:54). Liu found that the prestige of academic programmes is very important if research universities are to succeed in obtaining research grants, recruiting top academics and students and seeking contributions and donations from outside sources. In addition, it was found that decreases in library volumes and serials over time will erode the prestige or quality of academic programmes at a university and this will eventually lead to the loss of the university's competitive edge (Liu 2001:62).

The advantages of collecting traditional media are still relevant, in spite of the growth in the digital distribution of information and the proliferation of new electronic formats. Many print documents will not be digitised and are still valuable to scholars (Miller 2000:653). In addition, print media are still the best for reading narrative text, and print on paper is still easier to read than digital output. Colour illustrations in print media are of a higher quality than those rendered by current digital technology. Mathematical symbols and diacritics are accommodated better in print than on the Web and no special equipment is required to access the information. Print media are portable and readers do not require a power supply to access the information. Print media can be archived satisfactorily - something that is not being dealt with adequately when it comes to digital media (Cox 1997:46).

Although research shows that traditional formats are not going to be superseded by electronic formats in the next few decades (Miller 2000:653; OCLC 2003:1), there is evidence that traditional publishing is slowing down (OCLC 2004:2). The apparent unlimited library allocations for the purchase of books and serials in the 1970s have

been drastically curtailed in recent years and bibliographers have had to be increasingly circumspect about all materials purchased for the library.

In a survey conducted at the State University of New York (SUNY) the researcher found that there had not been cuts in expenditure on print resources in subject areas where these were preferred to their electronic equivalent. This is particularly true in the fields of the art and architecture (Petrick 2002:131). Librarians at SUNY noted the continued importance of monographic, serial and audiovisual acquisitions even though there was an increase in the availability of e-resources (Petrick 2002:133). Although there was a large increase in access to computer files at SUNY, the amounts spent on books, serials and audiovisual material increased as well (Petrick 2002:127). This finding led Petrick (2002:130) to conclude that increased expenditure in e-resources does not automatically result in a decrease in the amount spent on print and microform serials or books.

6.2.1 Developing monographic collections

In spite of predictions that printed books would cease to exist in the new digital age, academic libraries are still spending large parts of their materials budgets on books. As discussed in section 4.5.2, many academics still consider books to be important sources of information.

Horacek (1993:278) describes the monograph as the traditional vehicle for considered and sustained development of a subject, of the writer's ideas and even, in creative writing, the actual subject itself. He goes on to define the "advanced research monograph" as that which presents complex argument, the latest research on specific aspects of topics or the views of a group of scholars in a volume of conference proceedings.

South African selectors share a problem with those in Australia in that most of the books and journals acquired have to be bought abroad due to the small local publishing output (Leonard 1994a:151). This lack of quick and easy access to print media means that South African libraries pay high prices for the material to cover freighting costs. Subscriptions tend to take a long time to become active and books

cannot be expected to arrive within a few days of placing orders, as they have to be freighted.

6.2.1.1 *Statistics of monographic collections*

Haider (1996:147) states that it is the book collection that actually characterises a library. Horacek (1993:278) supports this view. He says that monographs are still the solid core of any research collection. In spite of their competition from digital information media, books are still sought by researchers and academics, and will continue to form an important source of information in research and academic libraries.

Statistics given of the monograph collection of some academics libraries reveal that monographs are still an important part of the total collection of information resources:

- At the University of Toledo, there are 1,6 million volumes in the collection (Faculty use of an academic library reference collection 1998:57).
- At Trent University, which has 4,000 FTE undergraduates and 150 graduate students, there is a collection of about 490,000 monographs and bound serials (Scigliano 2000:44).
- Polish polytechnics on average hold 370,000 monographic volumes, whilst universities on average hold 1,043,000 volumes (Gorny *et al.* 1999:161).
- The University of Nevada, Las Vegas (UNLV) library holds nearly 800,000 monographs (Starkweather & Wallin 1999:643).
- The University of Sussex with 6,000 FTE students has approximately 600,000 volumes of monographs (Pendlebury *et al.* 1994:129).
- A study of 64 college libraries in the USA in 1991 revealed that libraries held between 127,444 (for the smallest college library) to 1,192,624 (for the largest) volumes of books (Hardesty & Mak 1994:364).
- “Modest-sized “ collections at 427 institutions that offer mainly undergraduate programmes plus a few master’s level programmes range from 100,000 to 299,999 titles (Hardesty & Mak 1994:365).

- At the University of Toledo the reference collection alone contains about 25,000 volumes, including indexes. This is considered a typical academic collection of reference monographic works in the USA (Faculty use of an academic library reference collection 1998:57).

6.2.1.2 Distinctive components of monographic collections

One distinct part of the monograph collection is the reference collection. This is material which is usually kept in the library building to provide instant information on a variety of subjects. The reference collection is often the starting point in research or other problems encountered by academics or researchers. It is very important to ensure that subject gaps do not occur in this part of the collection (Bordeianu & Carter 1996:45). Liestman (2001:80) who has worked with reference material extensively believes that there should be a separate collection development policy to cover reference materials. This would ensure that a balance is kept in reference collections regarding issues of format, content, etc. and this would provide a means of managing the size and growth of such a collection. Guidelines could also be given in such a policy regarding the acquisition of expensive items. Liestman (2001:82) believes that these guidelines would eliminate some of the subjectivity in selecting material for the reference collection. Much of the material collected for reference is superseded by newer editions on a regular basis. This makes it very important to include guidelines regarding the weeding of reference material in a collection development policy (Liestman 2001:94-95). Weeding applies particularly to annual publications such as almanacs and yearbooks.

Textbooks are another important component of most academic library collections. There is currently a tendency in many disciplines that a few introductory textbooks dominate the market (Agre 2000:499). This leads to a measure of standardisation in this specific medium. Again these are of particular value to undergraduates.

Another distinctive part of a monographic collection is the so-called “core collection”. Undergraduate students require similar collections of information resources that serve the fairly limited needs of undergraduates (Hardesty & Mak 1994:362). In an American study, it was found that there was not much uniformity in the core

collections of undergraduate libraries. There were many unique items in separate core collections and an overall lack of overlap in the collections. This is believed to be because of the idiosyncratic nature of undergraduate curricula and also that of college faculty (Hardesty & Mak 1994:368-370). Because faculty tend to select according to their personal preferences, it is believed that librarians should play a larger role in developing core collections for undergraduate libraries because they are in a unique position to assess and improve collections.

It is essential that academic libraries should hold a core collection of books, as these are required by academics as a part of their teaching and research activities. At the Eastern Washington University (EWU) libraries, funds were provided specifically to acquire a “core collection” of books because this was considered to be inadequate at that institution. In order to upgrade the core collection, librarians reviewed the monograph titles recommended for undergraduate students in two recent volumes of *Choice*. Funding was given to purchase 70% of the books recommended for college libraries by *Choice* or which met *Choice*'s criteria (Rea 1998:147). The core collection should also be an important consideration when developing monographic collections for universities of technology. Vendor approval plans have also been found to be valuable in building core collections (O'Connor & Pugh 2000:65). Use of these plans means that books matching the profiles are automatically sent to libraries upon publication on approval.

6.2.1.3 *Book sales*

Wood (1997:224) found that there has been no decline in book and journal publishing in recent years. O'Connor and Pugh (2000:65) indicate that in any given year, approximately 50,000 scholarly and academic monographs are published in English.

In spite of book publishing remaining fairly constant, book sales have declined in recent years. According to OCLC (2003:2) book sales in the USA declined in 2001, but they predict that the number of books sold will increase modestly in future by approximately two percent annually. In a later study by OCLC (2004:9) it was found that in the USA 23 million fewer new books were sold in 2003 than in 2002. They did find, however, that monographs are still important for scholars in some

disciplines, but that print-on-demand (POD) and e-books are gaining in popularity (OCLC 2004:10-11). POD could be a significant development in the publication of monographs. Books are predicted to be available primarily in print in future and POD is expected to take a larger proportion of the market in monographs (OCLC 2003:2). There is an overall trend of increasing production and declining demand. O'Connor and Pugh (2000:61) found that the number of monographs bought for Australian university libraries is declining.

Spending on library books has dropped by six percent from 2000 to 2001 and by eight percent in 2002 (OCLC 2003:4). University press sales in the US are also down. Hardcover sales fell 27% in 2002 and paperback sales dropped 10%. Because sales are down and because course packs are being used increasingly, the publishing landscape for books has become increasingly difficult. In order to be financially viable, most publishers need to sell 2,500 to 3,500 books but most books are currently selling fewer than 1,500 copies (OCLC 2003:4).

These findings are in keeping with the fact that academic institutions have decreased funding for the acquisitions of library material and that there have been large increases in the unit price of scholarly monographs. There is concern about whether a library should buy a book or get it through interlibrary loan if required. Some titles go out of print quickly and the price of monographs has escalated. This could mean that no libraries have certain important books in their collections any more. It must be remembered that interlending is not possible unless collections are available from which to borrow (Jackson 2004:91).

Selectors must bear in mind that monographs are only one part of the vast amount of information available today. It is imperative to remain informed of the entire spectrum of information channels, media and formats in order for collections to continue to be relevant to the needs of researchers and academics.

6.2.2 Developing collections of serials

The other important traditional medium is the journal, which has gained increasing stature in collection development in academic libraries. A vast number of journals are

published, covering every field of study and these are very important to researchers and academics. The proliferation of titles could be accredited to “twigging” or increasing specialisation resulting in journals becoming more narrowly focused (Lenzini 1990:22).

Serials are important to researchers as these can be published more quickly than books can. The information in them is thus more current and findings published in them are comparatively up-to-date. In the RLG Conspectus, it is stated that a research collection must have a very extensive collection of journals (Horacek 1993:279). This indicates that journals are important to research activity. Journals serve as a vehicle for the latest research findings.

6.2.2.1 Statistics relating to serials

A problem facing those responsible for collection development is the unprecedented increase in the price of serials. In a recent study, Blake and Surprenant (2000:894) discovered that from 1975 to 1995 (a period of 20 years) the average price of scholarly journal subscriptions increased from \$16.20 to \$149.46, *i.e.* 823%. This constitutes an average increase of 41,2% per annum. This problem together with the increasing proliferation of publications especially in scientific, technical and medical journals means that no research institution can strive for any measure of comprehensiveness in journal coverage on its own (Wood 1996:430).

Patterns of journal publication show that there was a steady increase in the number of current serial titles published from the 1950s to the 1970s, but that this then tapered off somewhat in the 1980s (*University libraries and scholarly communication* 1992:78-79). A Mellon Foundation study (*University libraries and scholarly communication* 1992:53) revealed that, due partially to the increases in subscription prices, there has been a steady increase since 1962 amongst American research libraries in the percentage of the materials budget allocated to serials. This study revealed also that although expenditure of serials increased, there was not a comparable increase in the number of serials acquired. Ford (1999:49) found that many librarians think that 60% of a materials budget is the maximum that should be

allocated to serials but add that this depends on the range of subjects offered at each institution.

In 2004, there were about 44,000 active scholarly journals, about 21,000 active refereed scholarly journals, 15,000 active scholarly e-journals and 11,000 refereed, scholarly e-journals (OCLC 2004:11). Jeevan (2000:113) also found that *Ulrich's* shows an increase in the number of journals titles published and concludes that journals continue to occupy a major position in disseminating scholarly information. In the UK alone, it is estimated that the refereed research literature in 2002 consisted of two million articles being published per year in 20,000 journals (OCLC 2003:5). This shows the enormity of the scholarly journal industry. It should be noted that in 2003 the magazine industry suffered a considerable loss. Unit sales for all magazines, including journals, in that year dropped from 2,2 billion copies in 1992 to 1,5 billion in 2002 (OCLC 2004:9).

Statistics of the number of titles subscribed to by some academics reveal the following:

- Polish polytechnics subscribe on average to 1,320 periodical titles (Gorny *et al.* 1999:160).
- The EWU (Eastern Washington University) subscribes to a total of 1,415 journals and annuals (Rea 1998:146).
- At the University of Toledo, there are 4000 journal subscriptions. This is considered an average medium-sized academic library (Faculty use of an academic library reference collection 1998:57).
- Murdoch University which has 9,169 FTE students has increased its serials collection from 3,327 subscriptions in 1996 to 25,418 titles in 2002. Of these 20,670 are part of aggregations (Genoni & Jones 2004:113).
- The UNLV library holds about 7,500 serial subscriptions (Starkweather & Wallin 1999:643).
- The University of New Hampshire subscribes to 6,000 journal titles and found in an investigation of peer institutions that only two of these had fewer titles (Diedrichs 1997:261).

Clearly print journals are still considered to be important media in academic libraries.

6.2.2.2 *Collection development standards and guidelines for serials*

According to Morris (1986:192) the Association of College & Research Libraries (ACRL) standards recommend that it is good practice to own any periodical title that is needed more than six times per year. The standards recommend that a library should subscribe to as many titles as are deemed necessary by academics and librarians to provide adequate depth and diversity of holdings. Although these standards have since been altered in that libraries are now expected to benchmark their collection against other similar institutions and are expected to “provide varied, authoritative and up-to-date resources that support their mission and the needs of its users” (ACRL 2000:178), the 1986 ACRL standards still give some guidance regarding journal subscriptions. Joswick and Stierman (1997:54) claim that libraries should either subscribe to the most important journals in their researchers’ fields of study or offer some other way of acquiring timely and convenient access to these. The library should constantly evaluate its collection against standard bibliographies and changing institutional needs when it comes to adding new titles and identifying titles for withdrawal when no longer needed.

A study at Louisiana State University revealed that the most cost-efficient titles for the library to own are the cheaper titles. This study revealed that it would benefit academic libraries to acquire the needed articles from the more expensive but less used journals through document delivery services (Hamaker 1996:44). Here again the problem arises that researchers are then denied the benefit of browsing through journals held in the library and having to wait for the delivery of the articles they require. Hamaker (1996:39) concludes that with many of the more expensive journal titles, libraries are serving only a very small segment of their primary clientele at a very high price.

An important part of collection management of a serials collection is the process of cancelling titles which are no longer required or can no longer be afforded by the institution. It was found that this is currently a standard procedure in a library’s

annual budget allocation process (How to become a serial killer ... 2002:103).

Decisions made by librarians in this regard contribute in some measure to the cost of information in the future. Continuing to subscribe to expensive journals will keep prices high for some time to come.

In the modern information environment, collection development library staff should also be aware of which journals are available through aggregated, full-text databases such as *Emerald* and *EbscoHost*. If easy access to these databases can be provided for library users, subscriptions to journals available in this way would be duplication and wasteful of precious resources.

6.2.2.3 *Core collections of serials*

Serials selectors are urged to maintain a core collection of journals in all fields of study and research, but the selection of such journals is still subjective. With declining materials budgets, libraries are increasingly obliged to cancel even core journals (Voorbij 1996:190). In a study carried out by Joswick and Stierman (1997:50-54), it was found that local needs and preferences differed substantially from those cited in national and international lists of core journals such as ISI's *Journal citation reports (JCR)*. Academics at Western Illinois University were found to publish in, and cite from, a list of journals that digressed substantially from the standard lists of core journals. This disparity emphasises that it is not very wise to make collection development decisions based solely on national or international data. Joswick and Stierman (1997:52) found that at colleges and smaller universities, where collections are usually less comprehensive, it was particularly important to be guided by local needs rather than by lists of core journals. Universities of technology would fall into this category and should thus be aware of these findings. In this study, it was also found that academics do not consistently use the same journals for their research. Joswick and Stierman conclude that there is no single compact list of core journals that will meet the needs of an entire university community. Wood (1996:442) concurs that the foremost priority of a library is to serve its primary clientele and to fulfil its mission.

At EWU, the journals to which they subscribe and which are indexed in the Wilson indexes were defined as the core journal collection. Bibliographers at this institution decided that the target of subscribing to 60% of the titles indexed by the Wilson core indexes would be their objective (Rea 1998:146). The decision to set the 60 percent target was based on their need to provide onsite access to a core journals collection appropriate for the undergraduate student at EWU (Rea 1998:147).

A university of technology library should thus ascertain the needs of their academics and researchers and build serials collections accordingly, bearing in mind which journals are considered to be important in indexes and bibliographies of core journals published nationally and internationally.

6.2.3 Developing collections of other traditional formats

Traditionally, libraries have also collected material in other formats, including maps, slides, microform, artefacts and audiovisual material including video recordings, sound recordings, film, and so on (Whichard 1985:37). Bibliographers at an academic library must evaluate the user needs based on the subjects offered at the institution, and ensure that the necessary material is available in the library to satisfy those needs.

At Martin University, faculty members selected videocassettes as their preferred medium for classroom instruction (Williams 1996:36). This means that there is still an important place for this medium in an academic library. It is expected that more audiovisual material will be embedded into technology formats in the future (OCLC 2003:3). DVDs comprise 37% of rentals for AV material but only six percent of library collections, with a projected rise to 31% in two years. Videocassettes are still very popular in academic libraries for teaching purposes. Overall the circulation of audiovisual material is increasing.

The future of material produced in microform is unsure, especially in the light of the emerging digital formats in which information can be provided today. At SUNY, some of the member libraries have cut back on subscriptions to serials in microform format because of the relative unpopularity of this medium (Petrick 2002:131). An

added reason to cut back on subscriptions to microform is that in 2001 costs for this medium rose by 16% (Petrick 2002:131) thus making it a relatively expensive format.

When selecting non-print material for the library's collection, one is also confronted with decisions about the selection and evaluation of the appropriate equipment or technologies to make these materials available to users. It could be necessary to provide venues where users may use the media, which involves further costs. It is thus very important to make informed and well-considered decisions when thinking which formats will become part of the library's collection.

The selection tools for non-print materials such as video- and audio-recordings are less well-developed than those for print material and are often diverse, eclectic and random in their coverage (Whichard 1985:49). It is also more difficult to source such material. These factors make the acquisition and selection of non-print traditional media somewhat different from that of print media.

6.3 COLLECTION DEVELOPMENT ISSUES REGARDING DIGITAL MEDIA

As technology advances, so an increasing array of formats emerges to provide digital access to information. New digital formats are rapidly expanding the ways in which information is presented to scholars (OCLC 2003:1). Electronic or digital media are those media which do not exist physically in hard copy but can be accessed on demand using a computer (Blake & Surprenant 2000:910). Access to electronic media can be via an online library catalogue, CD-ROM network or a stand-alone CD-ROM or it could be via telecommunications to database vendors or other online information providers (Miller & Lundstrom 1996:59-60). Electronic or digital media include abstracting and indexing services, full-text materials, electronic journals, the offerings of electronic aggregators, document delivery services and free resources available through the Internet (Breaks 1999:108). They can be accessed via CD-ROMs (networked or stand-alone), gateways which guide users to relevant resources on the Internet and databases on magnetic tape (Norman 1997:124). Internet resources could include electronic sources found via the World Wide Web (WWW), Gopher, telnet, FTP and email, as well as messages from electronic discussion lists, electronic

conferences, bulletin boards and Usenet with its newsgroups, electronic full-text books and subject databases (Coutts 1998:283; Norman 1997:125). There are also online databases from vendors like Dialog or magnetic tapes which can be loaded locally on the library's OPAC. Other digital resources are bibliographic databases like CARL's *Uncover* and OCLC's *FirstSearch* (Norman 1997:125).

Academic libraries have had to incorporate these new formats into their traditional collections in order to meet more sophisticated user needs and make information available as quickly and conveniently as possible. One of the first means of incorporating digital information into library collections was mainly through the use of CD-ROM. Bibliographic databases were produced in this format and were soon widely used. Later, online access to digital media became popular and soon publishers were increasingly producing material in electronic format. This led to the publication of electronic books, journals and reports. Breaks (1999:109) states that while some academic libraries still subscribe to CD-ROM versions of bibliographic databases, use is increasingly being made of network access to remote hosts.

Lynch (1998:134) has a theory that there is a "critical mass" issue with digital collections. He has found that having only a small amount of digital material interspersed randomly in a primarily print collection has little value to users. This researcher has also found that users must be made aware of the resources that are available electronically. This is only possible when there is enough digital information on offer to merit special attention in the library.

There are certain matters surrounding digital media that require urgent attention. Most pressing are the collection and archiving of e-journals, the relationship of the Internet to collection development, cooperative efforts in collection development and the preservation of digital materials (Billings 1996:9). The poor or nonexistent archiving of electronic media is possibly the strongest reason why print still prevails in scholarly communication (Johnson 2004:74; Landesman & Reddick 2000:113). The constantly changing technology and lack of uniformity in menus also proved to be significant barriers to the use of electronic resources (Hewitson 2002:48). In addition, the Internet is considered slow, downloading is not always possible, there is a lack of access to good equipment, passwords create problems and graphics are

often poor (Nelson 2001:209). More specifically, tables and images don't transfer well from print media to digital media (Johnson 2004:74).

Technology demands a large capital investment in equipment that very soon becomes obsolete (Cox 1997:46). The benefits and usage must thus be exceedingly high to make the use of electronic media viable in academic libraries. It must be remembered that permanent ownership of electronic media is not guaranteed, as is the case with physical, traditional resources (Naylor 1999:261). Another problem is that much information is available in physical or print format only, not online or in digital format (Petrick 2002:125). Major forces are trying to increase the number and quality of electronically available documents, but it will be some time before the majority of documents are available electronically (Miller 2000:654). The lack of indexing of most electronic resources is proving to be a considerable problem because it is difficult to locate many of the potentially useful electronic resources (Cox 1997:46). Selectors of digital material need not only knowledge of the subject field and of the users, but also of legal issues such as contracts, site licences and copyright. Knowledge of information technology is also essential in order to ensure that the information is correctly incorporated into the library's computerised system (Blake & Surprenant 2000:915).

Emerging formats are changing the ways in which materials budgets are allocated and spent. In 1997 it was found that academic libraries were spending between one and twenty percent of their materials budgets on electronic media and at this time it was thought that the size of electronic collections was still relatively small but growing (Norman 1997:130). Each year seems to see an increase in the proportionate amount spent on electronic media and in a survey carried out at SUNY, it was found that there was an increase of 195% in the number of computer files subscribed to from 1998 to 2000 at libraries in that institution (Petrick 2002:132). It must be added, however, that at SUNY additional funds were made available to cover electronic resources – these were not funded at the expense of print resources (Petrick 2002:132). It is foreseen that community colleges in the USA will soon be spending 30 to 40% of the materials budgets on digital resources (Petrick 2002:125). OCLC (2004:10) discovered that 41% of academic libraries planned to “aggressively” reduce spending on print resources and increase that for electronic resources. It is, however, feared

that redistribution of funds from collections into e-media and equipment carries the risk of impoverishing local print collections (Miller 2000:661). Although there is often the perception that information is cheaper in electronic format, the reverse is actually true (Jeevan 2000:114). According to Blake and Surprenant (2000:913) it is estimated that by 2010, 50% of the information provided and used in academic libraries will be in electronic format. In a later survey, a number of analysts predicted that the annual production of material in web-ready formats is projected to be too large to estimate by the year 2007 (OCLC 2003:1). Whether these predictions comes to fruition or not, digital media are gaining in popularity and also in the array of ways in which such information is offered to libraries. Academic libraries have to take cognisance of these digital formats and incorporate some of them in their collections.

6.3.1 Selection criteria for digital media

Selection of electronic resources differs from that of traditional media. Usually several options are offered by the publishers. Selectors have to look at the actual costs, as well as continuing and hidden costs of gaining access to the digital media (Blake & Surprenant 2000:914). Possible options include online or CD-ROM access, site licensing, consortium deals, bundled pricing and pay-per-view or transactional pricing (Davis 1999:103). Selectors will have to decide which options provide the best access at an affordable price to meet local user needs. Liestman (2001:91) adds that selectors must weigh the relative merits of the content, presentation and cost of the information under consideration. Equipment to access and view the digital media must also be considered, as the information must be made available to as many users as possible in order to justify the high costs of such information.

In a recent survey (Norman 1997:127-128), academics indicated that the following are useful criteria for selecting electronic media – in order from the most important to the least:

- relevance of material for the curriculum
- cost – does its usefulness to researchers merit the high cost
- the quality of the information contained in the resource

- scope of treatment
- relevance of the subject matter to the needs of the institution
- currency, authority and completeness of information
- language compatibility
- uniqueness of content
- number of access points or indexes available
- relevance of material for faculty research and relevance of material for reference
- availability
- equipment availability
- potential versus actual use
- hardware compatibility
- licence restrictions.

Selectors of electronic resources have to evaluate the equipment required to access the information. They also have to ensure that there is space to house the equipment. Other issues are that there are usually trade-offs with other resources and that there is an ongoing need for technical and vendor support (Miller 2000:658).

6.3.2 Developing CD-ROM collections

Digital information is also stored on CD-ROM. This can then be used on either a stand-alone computer, or can be networked across a local area network (LAN) which is usually the library, or even a wide area network (WAN) such as a campus.

Information on CD-ROM could include all kinds of information such as bibliographic citations, full-text versions of books or journals, images and interactive media. The Hong Kong University of Science and Technology library which was opened in 1991, started their collection with a strong collection of CD-ROM resources (Miller & Lundstrom 1996:58) because they see these are valuable to their users.

The main advantage in using CD-ROM, is that access is not dependent on telecommunication lines and as such is more reliable and quicker to access than online information. As a physical item (the compact disc itself) is available in the

library, archiving is more structured and once the library has bought or subscribed to that CD-ROM, it will continue to have access until the disc is damaged or destroyed. Publishers might provide access to the information on CD-ROMs for only a limited period, in which case a new access code will be provided each year. In such cases, access will be denied unless the new code can be provided. Problems have been encountered in collecting CD-ROM databases. It was found that one could confuse patrons with overlapping choices. It is essential to consider ongoing costs such as licence renewals and restrictions, hardware and software support and staff time. Libraries must also decide whether to acquire a network copy or a stand-alone copy of the CD-ROM and must decide whether special use instructions have to be written to instruct users in the use of individual CD-ROM products (Miller & Lundstrom 1996:54).

CD-ROM initially grew rapidly as a source of information and from 1996 to 1997, for example, the number of CD-ROMs listed in *CD-ROMs in Print* increased from 223 to over 9,000 titles (Norman 1997:123). It was noted that in the social sciences, the introduction of CD-ROM databases and the building up of CD-ROM networks brought about considerable changes in information retrieval (Rusch-Feja 1996:325). Until recently, CD-ROM was thought to be an important alternative to print resources, but once Web-based information systems started to develop, their popularity waned slightly (Miller 2000:650; Rao 2001:173).

6.3.3 Developing e-journal collections

An electronic journal or e-journal publishes original scholarly writings, is peer-reviewed or edited and is available in electronic format (Tomney & Burton 1998:420). E-journals are increasingly grouped into clusters owned by publishers or commercial groups. A simplified way of defining an e-journal is that it is a serial publication that is available in digital format and is distributed in various ways like CD-ROM and the WWW (Mgobozi & Ocholla 2002:81). It is also found in other formats like Portable Document Format (PDF). Some e-journals are purely digital and others are also available in print form. Rao (2001:171) defines an e-journal as a version of the traditional print or paper-based journal which is disseminated electronically directly to the end-user, but this definition is too narrow. Many e-

journals, especially the networked journals, are produced in digital form only with no print equivalent. Academics who use e-journals think of them as electronic versions of print journals (Nelson 2001:208).

6.3.3.1 Pricing and access models

E-journals have been in existence since 1976 and fully-fledged e-journals came into being in the 1990s. As the use of the Internet and especially the WWW became more widespread, journal publishers started to make their journals available in digital format. Publishers and learned societies began to experiment with the possibility of distributing journals through the Internet and this led to the development of many networked electronic journals. These include *inter alia*; *Comserve*, *Postmodern Culture*, *Psycoloquy*, *Public-Access Computer Systems Review*, *Online Journal of Current Clinical Trials*, which are peer-reviewed e-journals distributed via email distribution lists (Peek & Pomerantz 1998:335). As e-journals started to gain a degree of support from the scholarly community, so this emerging format began to gain a place in formal scholarly communication. Large scientific publishers now make many of their primary titles available online. In 2002, 75% of journals cited in *Science Citation Index*, 34% of those cited in *Arts & Humanities Citation Index* and 63% of journals cited in *Social Sciences Citation Index* were available in electronic format (OCLC 2003:4). It was predicted that while the production of print journals will remain unchanged, that of online journals will grow (OCLC 2003:3). In spite of the large growth in this format, in January 2004 a study was conducted which revealed that there were about 183,000 active serial titles in publication but that fewer than 20% of these are available in digital format (OCLC 2004:10).

By 2000 there were about 5000 Web-based e-journals, many of which are scholarly publications. There are also initiatives like SPARC and Stanford's HighWire Press whereby libraries, universities and learned societies are attempting to lower serial prices and challenge commercial publishers by publishing scholarly material themselves (Miller 2000:651). There are now repositories for electronic versions of papers known as Eprint archives. These are articles that are self-archived by the authors and are made available to the scholarly community before formal publication (OCLC 2003:5). One prominent example is ArXiv – the Physics ePrint archive which

is estimated to grow from its present 210,000 preprints to over 385,000 by 2007. The online environment has made it possible to provide open-access to the entire universe of refereed research literature (OCLC 2003:5).

Publishers first started providing e-journals in addition to the print versions to which libraries subscribed. As this technology and user patterns have changed, several models have been developed surrounding access to e-journals. The pricing structures can often be negotiated with vendors. A standard model offered in online publishing is a yearly renewable subscription to an e-journal or group of e-journals covering all available years of content (Publiker & Stoklosa 1999:16). Some publishers provide free online access to e-journals to accompany subscriptions to print journals. In some cases, digital access was made possible by providing subscribers with full-text versions of journals on CD-ROM (Naylor 1999:261). Some journals are published in electronic format only and subscriptions thus cover only the digital version. Some learned groups and societies have started online, peer-reviewed journals to which individuals or institutions may subscribe at no charge. Publishers often provide access through IP address recognition, or the licence could be based on a combination of individual, office and library print subscriptions (Publiker & Stoklosa 1999:16). They might offer one subscription fee for the main campus and a lower fee for additional locations (Publiker & Stoklosa 1999:20).

Some publishers of commercially available journals have now decided to make back copies of their journals available free of charge through their websites. There are also several commercial document delivery services available so that articles can be ordered online from the supplier. When paid for, the articles are delivered online or via fax. Fowler (2000:17) states that many scientific, technical, medical and other academic journals are being released in electronic format in addition to the paper versions.

6.3.3.2 Benefits relating to e-journals

E-journals are having a large impact on collection development in academic libraries. Although in general they are more expensive than print journals, they meet the needs of researchers and academics in a new way. Probably the most important benefit for

these users is that their availability obviates the need to visit the library physically. This format allows prompt full-text access to journal literature at any time of the day or night (McKnight 1997:5; Mgobozi & Ocholla 2002:81; Tomney & Burton 1998:425). The speed of publication is increased because the printing process is eliminated (Peek & Pomerantz 1998:338). For scholars who need to publish findings, the peer review process is quicker in the electronic environment so the speed of accepting and publishing articles is a considerable advantage (Tomney & Burton 1998:425).

E-journal articles are also more easily searchable than print versions as they have powerful searching mechanisms (Mgobozi & Ocholla 2002:82). Publishers of such journals are increasing their usefulness by offering services like “table of contents alerts” whereby users can be alerted to each new issue published of user-specified journals. It is possible to get free trials for many e-journals or aggregating services and these can then be reviewed by researchers before actually subscribing (Publicker & Stoklosa 1999:15). This free trial access to costly journals is of great value in academic library collections.

Pedersen and Stockdale’s (1999:45) respondents found the direct and easy access to information, the availability of abstracts, a common database of related journals and the ability to conduct keyword searches met their information needs. It was also found that articles from e-journals are easy to print (Eason *et al.* 2000:494). The use of multimedia and hyperlinks to create interactive relationships between and from indexing service databases to full-text articles and searchable text in e-journals are added advantages (Publicker & Stoklosa 1999:13).

Publishers also benefit from distributing their journals in electronic form because the paper, ink and distribution costs are eliminated. Regrettably these savings are not reflected in the price of e-journals in relation to print journals.

6.3.3.3 *Problems relating to e-journals*

Selectors and collection developers for academic libraries now partially base decisions of subscriptions to print journals on the availability of these journals in

electronic format (Grossman 2000:122), but there is evidence that the use of e-journals is not as widespread as some would have one believe. In a survey carried out in the United Kingdom, respondents were asked if e-journals impacted on library acquisitions. As many as 42% do not think that they impacted on acquisitions (Robertson 2003:177). It was felt by respondents that there are still areas of growth in e-journal use and that the number of e-journals published is growing rapidly. Gyeszly (2001:7-8) found in her study that use statistics of e-journals is not convincing enough to persuade her to cancel any subscriptions to print journals. She did find, however, that usage of electronic media over print journals is increasing.

One problem relating to e-journal subscriptions is that this medium relies on expensive equipment. This is not affordable to institutions that lack adequate funding. The cost of hardware to access this medium is extremely high (Mgobozi & Ocholla 2002:82; Nelson 2001:213). In addition to the cost of equipment, there are technical shortcomings of the hardware, software and networks required for the use of e-journals (Herman 2001b:444). The cost of the e-journals themselves is high because in order to gain access to all the e-journals academics require, institutions would need to subscribe to a number of aggregated services as well as to many individual titles and the databases of multiple publishers (Mgobozi & Ocholla 2002:82). There is an ongoing problem because the archiving of e-journals is inadequate, incomplete sets are offered and there is a lack of back issues (Rusch-Feja & Siebeky 1999:1). Libraries cannot rely on continuous access to these journals which makes them loath to cancel print subscriptions (Chroust 1998:377; Publicker & Stoklosa 1999:20).

A problem relating specifically to networked e-journals is that many of them are not peer-reviewed and their publication is erratic. These drawbacks prevent them from becoming accepted academic publications (Tomney & Burton 1998:420). It was also found in this study (Tomney & Burton 1998:424-426) that copyright problems and the potential for text alteration in e-journals impedes their use.

6.3.4 Developing collections of journal aggregation services

Journal aggregation services provide simplified and integrated access to a vast range of electronic journals in full-text format and include such services as *Emerald*,

SwetsWise, Elsevier's *Science Direct* and *EbscoHost*. These services can be either publisher-based (providing access to a collection of journals published by a particular publisher) or subject-based (providing access to say scientific or medical journal articles). The *Journals S.A.* database is nationally-based and provides full-text access to South African journals. Breaks (1999:112) compares aggregating services to supermarkets in their approach to providing articles in full-text. Libraries are limited by the independent decisions of primary publishers and aggregators. Many secondary publishers, like the Institute for Scientific Information, are developing hybrid products combining indexing and abstracting content with full-text databases of primary literature (Kaser 1997:69). There is now a blurring of boundaries between different categories of electronic publications. Bibliographic databases can link to the full-text of articles and articles could contain links to other articles or collections of data (Nelson 2001:212). This makes aggregation services very powerful channels for the dissemination of information.

6.3.4.1 *Benefits relating to aggregation services*

Through subscriptions to journal aggregation services libraries gain access to a vast number of journals to which they could not subscribe individually. This is an obvious advantage for a small library. Now the widespread use of the joint purchasing power of consortia means that libraries can benefit from consortial deals which result in reduced costs for these databases (Miller 2000:659).

Enhancements of full-text aggregated databases are constantly evolving. Some publishers now include links to valuable websites in their databases. Further developments are the inclusion of e-journals, e-books and even OPACs in databases. These enhancements provide an integrated searching capability. Some publishers of aggregated services include access to periodical content, encyclopaedias, dictionaries, primary source documents and other information sources in their databases (Brooks 2001:318). The ability to search several databases offered by the same vendor simultaneously has been available for some time. It is also often possible to link from results in bibliographic databases to corresponding full-text in other databases in some instances (Brooks 2001:319).

In general, academics and researchers enjoy the freedom of being able to access journal articles from a remote location and have embraced this new technology, but such subscriptions are very costly and are beyond the scope of small, underfunded libraries.

6.3.4.2 Problems relating to aggregation services

Collection developers should be aware that journal aggregation services are not substitutes for print journals or even e-journals. There is no guarantee that journals will continue to be included in aggregated full-text databases. Thus if print subscriptions are cancelled, access to these journals would be lost. If the library were to re-subscribe to these journals, there would be gaps in coverage (Brooks 2001:317; Petrick 2002:132). Publishers may not remove full-text back files but they can stop coverage of some journals. These cancellations are often not announced which results in libraries having gaps in the coverage of those journals, even if they renew their print subscriptions. Many publications have embargo periods in full-text databases. These periods could vary from three months to a year. This means that current issues of journals only appear in the database some time after their appearance in print (Brooks 2001:317). Brooks (2001:318) suggest that vendors of databases be asked:

- How many full-text academic journals have been removed from that product in the past year or two?
- How many full-text journals have been added in that period?
- How many titles in the database are peer-reviewed?
- Which full-text, peer-reviewed journals are unique to that database?

This could give an indication of the stability of the aggregated database.

Subscribers seldom have any choice in which journals they wish to have included in the database. A package is offered in its entirety. Many providers of these aggregated databases include inappropriate journals and information sources in the databases in order to depict a database that includes a vast amount of information (Brooks 2001:317). This means that, although cheaper than subscribing to all the e-

journals individually, subscribers are given access to a large number of journals in which they have no interest and which are of little value to them (Miller 2000:659).

It is important to remember that these full-text databases are merely leased – they are not owned. This means that each subscribing library must pay a substantial amount for short-term access to these resources (Miller 2000:659).

Genoni and Jones (2004:111) make the point that there is an emergence of large-scale aggregated datasets of full-text journals. The funding for access to these datasets usually come at the expense of existing subscriptions to print journals or a reduction in the number of monographs purchased. This reduces the number of unique items available for loan between consortia members (Genoni & Jones 2004:111). These packages have changed the collection profoundly, to the detriment of print collections.

6.3.5 Developing e-book collections

As the e-journal industry flourished, some book publishers decided to follow suit and make their products available in digital format. This led to the so-called e-book. There are two types of e-books produced today. The one requires a piece of hardware in the form of a handheld e-book reader with which to read the digital text. The other refers to electronic texts read on a computer, usually via the Internet. The PC-based model is aimed at institutional, academic or corporate markets rather than at individual buyers. Some e-books are created digitally whilst other have printed versions which have been converted into digital form (McLuckie 2005:92). An e-book is the digital equivalent of a book, which is a medium for communicating information, be it facts, teaching material, discursive writing or fiction (Bennett & Landoni 2005:10).

Most publishers or aggregators offer e-books in PDF format, but some offer additional features or functionality such as interactive tables that can be manipulated by the reader online (McLuckie 2005:96). Several pricing models are offered for web-based e-books, including an annual subscription fee, a once-off purchase price or a model whereby the institution could buy a number of points. Within the points

system, titles can be swapped in and out of the package. In some cases the purchase of printed reference works allows the institution to access the online version without any extra costs (McLuckie 2005:96-97). It was found that e-books is the fastest growing segment of the publishing industry. Sales in 2004 increased by 46% from 288,400 units in 2003 to 421,955 units in 2004 (OCLC 2004:10). It was predicted that roughly 450,000 e-books will be produced in 2007 (OCLC 2003:2).

E-books have been disseminated by a number of aggregators. The biggest of these are NetLibrary and Ebrary (Bennett & Landoni 2005:11). When a library subscribes to NetLibrary, batches of e-books are leased to libraries, who can then lend the e-books out for a limited period as one would do with print books. E-book readers have been developed to facilitate the use of these books. Users of the e-books can then download or print selections from these books within the limitations of fair use policies (Billings 2000:12).

Naylor (1999:262) found that there is still resistance to using books in electronic form. This he attributes to the length of the text involved because it is difficult to read large quantities of text in electronic form.

6.3.5.1 Benefits relating to e-books

The web-based electronic reference works or textbooks are more successful than those which require readers. An advantage of using this medium is that one can search for text within the work (McLuckie 2005: 93). It is possible with e-books to run keyword searches throughout the text of an e-book or even across a whole e-book collection (Bennett & Landoni 2005:15). There are usually hyperlinks to the relevant text. In addition, e-books lend themselves to the quick consultation of guidebooks, handbooks and other reference material (McLuckie 2005:93).

Usage statistics for e-books are usually available (McLuckie 2005:98). Some e-book producers provide statistics of the “turn-aways”, i.e. those users who were unable to access a title because the maximum number of users were accessing the text or who have found that the institution does not subscribe to a title. This information is proving very useful for collection development (McLuckie 2005:100). Shelving

requirements and processing of the books are eliminated when using e-books. Physical degradation and theft of books ceases to be an issue. This electronic medium allows an institution to reshape collection development from the just-in-case to the just-in-time model as books can be added and weeded from the collection with ease (McLuckie 2005:101).

6.3.5.2 Problems relating to e-books

There is still a lack of standardisation regarding e-book readers and e-book reader software. The wide diversity of hardware and software associated with this medium is confusing to readers (Bennett & Landoni 2005:12). Subscribers are faced with relatively high prices and low quality of most portable readers (McLuckie 2005:93). This creates a problem for a library when needing subscriptions to different e-books that require different readers.

Booksellers have been slow to experiment with selling e-books. This has resulted in the information supply chain for e-books being imperfect (Bennett & Landoni 2005:12). Although several publishers including Kluwer, Marcel Dekker, CRC Press, Wiley and Knovel offer scholarly books in this format (McLuckie 2005:94-95), it is generally speaking difficult to source the e-books one requires (McLuckie 2005:100). Overall it is felt that there is a lack of relevant and interesting content in e-books (McLuckie 2005:93). Electronic versions of recent scholarly and reference publications are not easily available (Chroust 1998:376).

Another problem is the general lack of resolution in the e-book readers, be they handheld devices or PC-based. The screen resolution is not comparable with paper reproduction (Bennett & Landoni 2005:10). Unlike buying a traditional book, access to an e-book is not just a once-off fee. Libraries are committed to annual access fees (Bennett & Landoni 2005:15). In addition to these problems, there are still copyright and technological issues which have to be addressed in the use of e-books.

Reception to this new way of disseminating monographic information was slow to gain the approval of libraries and of library users. Expenditure of e-books remains low in academic libraries (Bennett & Landoni 2005:12). To date, their future is

unsure, as users appear loath to embrace this innovation. Bennett and Landoni (2005:15) concluded that the usability of e-books is currently too poor to offer a real alternative to printed resources for serious academic study.

Three trends in e-books are emerging (OCLC 2004:5; Youngen 2001:214):

1. The introduction of dedicated reading devices is foreseen.
2. It will be possible to lease entire collections of books or even to lease complete libraries in the near future.
3. If priced appropriately, people will be able to purchase the smaller, more precise pieces of information they require.

6.3.6 Managing Internet resources

The Internet has become so ubiquitous that it is part of every academic library's array of information resources. Blake and Surprenant (2000:892-893) state that when the Internet burst into the consciousness of information professionals by the mid-1990s, it had the potential to alter completely the role of libraries in this new information society. This opinion is supported by Clayton and Gorman (2002:254) who claim that it is commonly believed that an experienced librarian with a PC and an Internet connection could provide information to at least a Level 2B in the Research Libraries Group (RLG) conspectus – i.e. the “Basic Information: Augmented” or even perhaps Level 3A – i.e. the “Intermediate: Introductory” level. Rusch-Feja (1996:328) states that:

... the basic function of the library as information center is now being challenged by the mere fact that the networked access to Internet and other networked information sources often provide the means to bypass the library in the processes of information location, retrieval, and acquisition.

These views of the usefulness of Internet are not supported by all researchers, who have identified several limitations on the Internet as a source of scholarly information. A considerable problem identified by Kiribirige and DePalo (2000:15) is that respondents in their study are unaware of the shortcomings of search engines, such as

the fact that search engines index only a fraction of possible sites, many sites lack authority and much of the information found there is only transient. The quality of the information available on the Internet is often of questionable quality and authoritative information is difficult to find amongst all the inferior and irrelevant information available (Pedersen & Stockdale 1999:48; Starkweather & Wallin 1999:653). Joint (2001:148) finds the Internet completely inadequate as a medium for scholarly communication compared to established library systems. Information on the Internet is not all vouched for by a referee system (Herman 2004b:124). Relevant resources are difficult to locate and relocate and are not well organised (Zhang 1999:762-763). Response times are often slow (Pedersen & Stockdale 1999:48).

A further problem is to ensure that the Internet is used as a source of accredited information for academics and researchers, and not merely as a source of entertainment. A serious limitation of the Internet is that there is no gatekeeper or censor who reviews Internet material and decides whether it should be accepted, edited, printed and distributed for the benefit of others, as is the case with print media (Blake & Surprenant 2000:910-911). The Internet has become anarchic. Although there are sophisticated search engines to find information, there is no quality control on the Internet (Cox 1997:45). These researchers point out that for print resources there is a well-established system of information professionals to review new and upcoming items. This system is lacking in the Internet environment.

In 2003 there were about nine million registered websites and the rate of growth is now slowing. In spite of this, it is predicted that there will be around 10,4 million websites by 2008 (OCLC 2003:7). On the Web, there are about 40,000 Web OPACs, approximately 250,000 bibliographic databases, encyclopaedias and numeric and full-text databases, more than 300 million numeric and other non-textual web pages and around 10,000 e-journals (OCLC 2003:7). Due to the vast number of sites, most searches for specific information lead to thousands of irrelevant websites being retrieved. The majority of the sites found even by an experienced searcher are irrelevant to the topic sought (Brooks 2001:316). This makes the Internet an untrustworthy source of scholarly information in an academic library.

As with print media, Internet resources should be consciously selected for libraries by bibliographers. Traditional collection building practices in this case translate into discovering and listing Internet resources (Joint 2001:149). Effective collection development concentrates on material that is relevant to the local information users and imposes standards relating to quality. Joint (2001:150) states that these standards are particularly relevant when it comes to selection of Internet resources in order to maintain the desired quality of the library's "collection".

It is a challenge for academic libraries to add value to Internet resources by making them more easily accessible to meet the information needs of researchers and helping their users to discern which are potentially valuable resources out of the millions of pages available through the Internet.

It is common practice in academic libraries to provide portals or gateways in various subject areas. Through these portals, selected Internet websites and other electronic information resources are brought to the attention of interested users by providing links (Breaks 1999:112; Jackson 2004:90). Gold (2000:77) suggests that libraries could add value to Internet sites by identifying valuable sites in various subject areas and then cataloguing these. By doing this, libraries can provide access to valuable information sources available on the Internet without actually owning such resources (Fourie 2001:24).

As with print collections, librarians must apply weeding of unlinked URLs by checking regularly on all URLs to which links have been made in the catalogue. This is necessary because Internet links are unstable and are often changed with no warning. Dead links must be removed just as obsolete material is removed from a print collection.

6.4 TRADITIONAL VERSUS DIGITAL MEDIA

In the environment where information is becoming increasingly available in digital format, library administrators have to make decisions as to the future composition of their library's collection. Much has been written about this topic, but ultimately each

library's circumstances is different and must be taken into account in making decisions between traditional and digital media.

Harloe and Budd (1994:86) make a valid point that it is the "convenience factor" that will always dominate the use of library resources, wherever those resources might be located. Users will always choose the resource that can be accessed with the least amount of effort. Thus, if customer satisfaction and service orientation are to be the guiding objectives of academic libraries, care should be taken to develop and manage collections that are the most convenient for the users.

In every academic library there are certain items that are constantly required by users and which should be easily accessible – the so-called core collection. Fourie (2001:26) defines the core collection as "a sub-set of the holdings that can be identified with reasonable assurance as being able to fulfil a certain predetermined percentage of the future demand of the present collection". Nisonger (1997:25) sees core collections as the most basic, fundamental and important materials forming the heart of a collection. Development of the core collection must follow the just-in-case model as this entails examining curricula and programmes at the institution and ensuring that resources are acquired to meet a percentage of the present and future needs. Core collections include those materials that are important to the body of users at each institution. It is especially frequently used materials that form part of the core collection and Fourie (2001:25) states that users must be provided on-site access to core materials. This access is so important to local users, that Fourie (2001:102) advocates that the core collections should not form part of resource sharing. It should be reserved to meet the information needs of the library's own users. The need for each library to develop core collections to meet local needs and support its mission is seen as the top priority in collection development (Allen 1994:9; Kennedy 1996:107; Pinnell-Stephens 1994:57). Collection development librarians have to first take care of their own users.

It is not just the needs of undergraduate students that should be considered when developing a core collection. Each library must also be self-sufficient for the research needs of academics and postgraduate students (Leonard 1994a:153). Harloe and

Budd (1994:86) support this view that the core collection should include both primary (research) and secondary (instructional) level materials.

Due to the fact that traditional media are immediately available to users without requiring access to a computer which is linked to the information, the core collection of academic libraries is usually available in print form, and consists mostly of monographic and serial print publications. This is one of the predominant reasons why it is foreseen that print media will continue to be very important media in academic and research libraries for a long time to come.

It must also be remembered that electronic publications constitute only a fraction of the volume of publications produced in print form (Voorbij 1996:202). This state of affairs is unlikely to change in the foreseeable future. Bearing this in mind, it is unlikely that e-publications will replace printed books and journals in the short and medium term. The two must co-exist in harmony in academic library collections.

As the e-journals industry is more developed than that for e-books, collection development librarians must make pressing decisions about which format to subscribe to for their journals. The cost of subscribing to both print and electronic versions of titles is becoming very expensive. One now has to gauge whether patrons would be better served with electronic media. If so, the library must balance its acquisitions of print materials with that of electronic media in order to provide maximum utility to its patrons (Johnson 2004:74). Lynch (1998:136) believes that if material is in high demand, getting the journal in electronic format might facilitate its use, but this researcher contests this allegation. In the smaller South African academic institutions, there is still no certainty that researchers and academics all have easy access to computers. Harloe and Budd (1994:84) believe that print versions should be acquired of the most heavily used and less volatile materials.

6.4.1 Digital libraries

When electronic media caused a stir in academic library circles in the 1990s, much was written about digital libraries. Chowdhury and Chowdhury (1999:411) define the digital library as follows:

A digital library is an assemblage of digital computing, storage and communications machinery together with the content and software needed to reproduce, emulate and extend the services provided by conventional libraries based on paper and other material means of collecting, cataloguing, finding and disseminating information.

The type of data included in a digital library are texts, numerical data, figures, photographs, sound, video, films, slides, and so on (Chowdhury & Chowdhury 1999:412).

In spite of the euphoria surrounding this concept, very few purely digital libraries have been created and sustained. The Hong King University of Science and Technology library opened in 1991 and was planned around access to digital information resources. Materials covered in their Collection Development Policy (CDP) are bibliographic and reference databases, textual and image databases, multimedia databases, courseware, instructional software and online resources (Miller & Lundstrom 1996:54). As the library grew, however, they saw the need to collect print resources as well and their book and journal collections increased by about 50,000 volumes per annum (Miller & Lundstrom 1996:53).

There were problems associated with providing access to electronic media exclusively. Firstly, technical issues were discovered regarding the development of appropriate network, hardware, software, standards, tools and techniques to drive the digital library – these must be robust but user-friendly and easy to adopt and use. Secondly, there are important considerations to be taken into account when converting traditional libraries into digital libraries. For example, should the traditional libraries be preserved and digital libraries built alongside it, should digital libraries be built only in specific areas alongside the traditional libraries, or should existing libraries be converted to digital libraries? Thirdly, economic, social and legal issues have to be addressed, such as how much can be spent to develop digital libraries and how can one change the habits and human behaviour of people accustomed to hard copies of documents (Chowdhury & Chowdhury 1999:440). There is also the high cost of international communication to be overcome (Berry 1996:27). In South Africa,

inadequate bandwidth makes the downloading of information online an extremely slow process. As the ICT infrastructure in this country develops, this latter problem will fortunately become less significant.

These barriers have meant that very few libraries throughout the world can claim to be solely digital libraries.

6.4.2 Hybrid collections

Researchers concur that selectors must work towards reaching an appropriate balance of print and digital media in order to meet the information needs of library users.

Atkinson (1998:8), Coutts (1998:283), Harloe and Budd (1994:84) and Rowley and Black (1996:25) agree that selectors have to decide how to merge both traditional and digital media into their collections in the most advantageous manner. Harloe and Budd (1994:86) believe that there will be a continued evolution of a hybrid system consisting of part print but increasingly electronic media in the first decades of the 21st century. It will become a challenge in this time to continue to manage traditional media in an environment in which information is being increasingly conveyed in digital form (Atkinson 1998:8). Selectors will have to take cognisance of how information is being packaged, how access can be gained to the packaged information and even of how it is created, stored and used in the digital environment (Fisher & Leonard 1997:208).

Academic libraries are currently developing collections in a hybrid environment and this will continue for a long time (Coutts 1998:283). Whilst it must be recognised that electronic media are partially replacing print media, the former are very expensive. The proliferation of electronic information is adding to the overload of information which prevails today. Even the best research libraries today struggle to meet their researchers' needs because of the flood of information sources in an expensive array of formats (Miller 1993:320). Rowley and Black (1996:25) point out that selectors are confronted increasingly with the need to choose between traditional and digital information formats, many of which are still experimental. Selectors are often urged by their users and parent institutions to acquire the very latest formats for their libraries. This leads them to rush headlong into the implementation of new ICT

models, some of which are poorly researched and inadequately archived. Billings (1996:6), whilst conceding that selection is still one of the most important issues in the information service process, foresees problems as the information world continues to expand and information objects become increasingly complex. Selectors are faced with increasingly complex decisions as the digital information environment develops.

Coutts (1998:287) maintains that selectors should not see the electronic environment as harmful to the existing heritage of libraries, but as something capable of enhancing and extending it for the benefit of the future research community. Electronic media are developing quickly and the best should be taken from the technological developments to create a harmonious collection of traditional and digital information resources. Demas (1994:72) sums up the merging of traditional and digital collections as follows:

The challenge of this generation of librarians is to seamlessly knit together a multiplicity of formats and access mechanisms into one intellectually cohesive, user-friendly set of information resources and services.

6.5 CONCLUSION

South African academic libraries are mainly hybrid collections of traditional and electronic media. There is a need for print media, especially monographs and journals, non-book material such as videocassettes and other recordings as well as the vast array of electronic media which can be accessed with the help of a computer. Media that have developed into important components of research collections are e-journals and aggregated services which provide to pre-selected bundles of journals or periodicals. Another important medium is CD-ROM; which can be used as either a stand-alone database or it could be networked. The Internet itself is a vast, if unwieldy, source of data and information and is an important channel of information for scholars. The e-book is an emerging medium which is still evolving, and has found a measure of favour in scholarly circles as a source of information.

Overall, it has been shown that academic libraries should contain strong collections of traditional media as well as those electronic media that have developed into

meaningful contenders as sources of information. These include especially e-journals, CD-ROM and aggregated databases of full-text information resources. To a lesser extent, e-books should become part of academic library collections. It is conceivable that libraries can become part of the evolution of this medium and could turn it into the type of digital information resource that would add value to a scholarly, research collection. By the very nature of electronic media, it is essential that academic libraries provide adequate computer equipment to provide the kind of access to these sources of information that will justify their cost.

In the following chapter, the collection development practices at the Auckland University of Technology will be discussed and evaluated. The ways in which these practises coincide with the information needs and information-seeking patterns of academics and researchers will be gauged as well as the extent to which they have assimilated the various information-bearing media in that library. The practices of X University of Technology in South Africa will also be discussed and compared with that of the University of Technology in New Zealand.