Library Automation

DLIS007

LIBRARY AUTOMATION

SUBHAJIT PANDA
LIBRARY ASSISTANT, DMC&H

SYLLABUS

Library Automation

Objectives:

- To improve control over collection.
- To have an effective control over the entire operation.
- To improve the existing services.
- To share effectively the resources among various libraries in a region.
- To avoid duplication of work.
- To use the services of the existing staff effectively.

S. No.	Topics
1.	Library Automation – Definition , Need, Function and requirement of library Automation.
2.	Basic Knowledge of Library software.
3.	Library Automation in acquisition.
4.	Library Automation in Technical Processing.
5.	Library Automation in Circulation Section.
6.	Library Automation in Periodical Section.
7.	Library Reports.
8.	Computerization Information Services (CAS).

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Unit 1: Library Automation: An Overview

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Objectives

After studying this unit, you will be able to:

- Discuss the concept of Library Automation

- Explain the need and purpose of Library Automation

- Describe the Library Automation Process

- Discuss the challenges in Library Automation

- Explain the Library Automation Trends

Introduction

Not many years ago, libraries used card catalogues, typewriters, and manually assigned due dates. Library automation, an up-to-date method to help libraries and library patrons to effectively use library resources, is now streamlined because of computers and software. Automation is a process of using the machineries for easily working and saving the human power and time. The main purpose of library automation is to free the librarians and library staff and to allow them to contribute more meaningfully to spread of knowledge and Information. Thus, automating a library is the process which restructures its functions and reinvents its services. By keeping a

database as the basis, automation converge new technologies of information storage and retrieval with traditional housekeeping operations.

1.1 Concept of Library Automation

The word automation has been derived from a Greek word "Automose" which means something which has the power of spontaneous motion or self-movement. Automation, when used in a library context, refers to the computerization or mechanisation of all library activities. ALA Glossary of Library and Information Science defines automation as "the performance of an operation, a series of operations or a process by self-activating, self-controlling, or automatic means. Automation implies the use of automatic data processing equipment such as a computer or other labour saving devices". The term automation was first introduced by D. S. Harder in 1936 but the word library automation has been used in literature for the last five decades. According to the International Encyclopaedia of Information Technology and Library Science, it is the technology concerned with the design and development of process and system that minimize the necessity of human intervention in their operation. Library automation has been defined as 'integrated systems' that computerize an array of traditional library functions using a common database. While this is still generally true, rapid technological change is forcing a re-examination of what it means to "automate the library."

In general, however, library automation has come to mean the application of computers and related data processing equipment to libraries. In the context of computerisation, a library information system may be defined as a set of library transactions, processing systems designed to provide information to library members and to support the operational, managerial and decision making information needs of library staff. It includes computer as one of its components. Thus, a computerized library and information system is a set of functional system encompassing:

● Library work practice and procedures

● Information technologies – computer hardware, software, having database management system and

● Work' forces (library staff)

Library automation refers to the phenomenon of mechanization of traditional library activities such as acquisition, serials control, cataloguing, circulation, etc. Library Automation is usually distinguished from related fields such as information retrieval, automatic indexing and abstracting and automatic textual analysis. However, now-a-days, a clear distinction is not maintained and library automation may sometimes include related fields as well. Although computers have a major role in library automation, telecommunication and reprography technologies have equally important roles because of the support they offer to library automation.

Notes An automated library is one where a computer system is used to manage one or several of the library's key functions such as acquisition, serials control, cataloguing, circulation and the public access catalogue.

1.1.1 Definition

Reitz (2004) defined library automation as:

"The use of computer systems to accomplish tasks originally is done by hand in libraries. Beginning in the 1960s with the development of the machine readable catalogue record (MARC), the process of automation

has expanded to include the core functions of acquisitions, cataloguing and authority control, serials control, circulation and inventory, and inter-library loan and document delivery."

Library automation may be defined as the application of computers to perform traditional library housekeeping activities such as acquisition, circulation, cataloguing, and reference and serials control. Automation is used to reduce the amount of staff time devoted to repetitive (and often less challenging) activities that must be done in any properly functioning library. It is to be remembered that, various library operations are automated, not the library as such.

Library Automation has been defined as 'integrated systems' that computerizes an array of traditional library functions using a common database (Cohn, Kelsey and Fiels) and while this is still generally true, rapid technological change is forcing a re-examination of what it means to "automate the library". In the broadest sense, Markuson means "employment of machines for library processes". ALA Glossary of Library and Information Science defines automation as "the performance of an operation, a series of operations or a process by self-activating, self-controlling, or automatic means. Automation implies the use of automatic data processing equipment such as a computer or other labour saving devices". To Bierman it is "the use of computer and associated technology to revolutionize the meaning of libraries and redefine their existence" as a computerized library information system.

In the simple language "When we use machineries for collection, processing, storage and retrieval of information and do another works of library with the help of machineries that called library automation."

Library automation is the application of computers and also connected tools to the processing of data in a library or libraries. The automation might also be applied to some office procedures.

1.1.2 Objectives of Library Automation

The main objectives of the library automation are:

- Speedily disposal of library work

- Establishment of a well storage and retrieval system

- Time and human power saving with qualitative services

- Suitability for library cooperation and coordination development

- Simplicity in library management to meet the objectives

- Proper use of human resources

- Development of the new library services

- Preparation of reports and correspondence

- Suitability for resource sharing and networking

- Development of human resources

1.1.3 History and Development of Library Automation

The effects of ICT on libraries and information centres are characterised by:

- Mechanisation – doing what we are already doing more efficiently;

- Innovation – experimenting with new capabilities, that the ICT makes possible; and

- Transformation – fundamentally altering the nature of the library operations and services through the capabilities extended by ICT.

It could be said that library automation began in 1930's when punched card Introduction equipment was implemented for use in library circulation and acquisition. The computer technology first arrived in libraries in the late 1960s in the form of locally developed software or commercial packages intended to automate library processes. The whole phase of library automation development i.e., 1960 to date may be grouped into four distinct eras:

- *First Era:* This era is characterised by computerisation of library operations by utilizing either commercial automation package or software developed in-house. The development of shared copy – cataloguing system is another significant achievement of this phase that utilised computer and communication technologies for collaboration and cooperation within the library community.

- *Second Era:* This period of library automation is characterised by the rise of public access i.e., the arrival of OPAC as a replacement for the traditional card catalogue. This period also saw major developments in online access to abstracting and indexing databases, union catalogues, resource sharing networks and library consortia.

- *Third Era:* This era is characterised by the full text access to electronic documents over high-speed communication channels. The advent of Internet as global publishing platform and largest repository of information bearing objects revolutionised the ways and means of delivering library services.

- *Fourth Era*: It is known as 'networked information revolution' era. This era supports a vast variety of digital contents and services that are accessible through the network at any time, from any place, can be used and reused, navigated, integrated and tailored to the needs and objectives of each user. Digital libraries, multimedia databases and virtual libraries are major achievements in the present era.

The above discussion clearly indicates that in the first era of automation, libraries were largely stand-alone; in the second era, they became reliant on campus networking strategies; in the third era, the libraries were critically dependent on both LAN and WAN for patron access to library services. In the fourth era, libraries are not only offering their own network-based services but also becoming increasingly involved in the management and organisation of external activities on the network. As a direct result of these developments, LMSs also changed considerably through four different generations.

1.1.4 Special Features of Library Automation

Special Features of Library Automation are as follows:

- It is an electronics based activity which is carried out by human beings

- It is helpful to providing library services

- Standardization in library work

- Accuracy in work

- Speedily communication of information

- Avoid duplication in the library work

- Trained staff

- Availability of information

- It is a time saving system

- User friendly system

1.1.5 Advantages of Library Automation

Advantages of Library Automation are as follows:

● Computers and advanced technologies have made it possible to enhance services in diverse industries including libraries. Through library automation, in-house collections and resources can be computerized, spreadsheets and databases can be automated, CD-ROMs can be provided in-house and the Internet can be made available to patrons.

⚠ *Caution* Various factors must be considered when planning library automation include how automation will help the library and educate the public, how automation fits into the library's technology plan and how it fits into the budget.

● Library automation reduces the workload for library staff in terms of cataloguing, circulation and acquisitions. This frees up time to provide a higher quality of service to library patrons. The staff becomes available to answer reference questions, help people with research work and find information on request. With automation, finding library materials such as books and reference journals becomes easier and less time consuming. Patrons no longer have to wait ages for a harried library staff member to attend to requests.

● With the help of library automation, automated cataloguing standards, for example, machine readable cataloguing (MARC) help librarians to catalogue items quickly. It is possible to catalogue items for easy reference using vendor-supplied catalogues. Professional cataloguing with the use of scanning technology can be employed where bar codes on books can be scanned directly into the catalogue database. Automated cataloguing makes the task of keeping track of library materials that much easier. It also helps to quickly identify inventory stock when budgeting for new library materials.

● There are many benefits to library automation, but one of the major disadvantages is employee cutbacks. With a huge amount of the budget being spent on automation, there is generally not much funding left over for salaries and employee benefits. Further, the need for the full complement of library staff is not there anymore. Automation takes over many of the functions that people perform.

🗨 *Example:* Patrons can check out their own books by swiping the library card and then scanning the book's bar code in a special scanning machine. Patrons no longer need people to help them locate library materials, the computers provide the information.

● Library automation leads to increased building and maintenance costs. Libraries that automate find their power consumption due to increased heating and air conditioning needs, rising beyond the anticipated levels. The noise and heat levels generated by people and many machines costs more than what a library is used to paying for its maintenance and power costs. Most library buildings are old structures and a good deal of remodelling work such as wiring and heating and cooling ducts will be needed to support the automation.

⚠ *Caution* Automation costs a lot of money to install and maintain, and libraries often overshooting the budget and running out of funding as a result.

1.1.6 Disadvantages of Library Automation

Disadvantages of Library Automation are as follows:

- *Employee Cut-Backs:* With the new automation systems in public libraries, there is less funding left in the budget for employees. Also, fewer employees are needed. The automation system does the work of human employees by scanning books and more. You can check books out by yourself by simply swiping your library card and then scan your book across the book pad. Users can be taught to handle terminals and systems, but it is harder and harder to find people, especially out on the floor of public libraries, of whom you can ask your perhaps not-fully-formed question or make a general inquiry.

- *Library Closings & Hour Shortages:* Many libraries are closing their doors because of economic pressures. Library doors are either closing permanently or they are closing earlier or opening later. Partly due to the new automation system, funding can no longer be afforded to keep them all up and running. Library closings mean less library access for all patrons. Library closings mean job closings, less children's story hours, book club closings and cancelled after-school reading clubs to help keep kids off of the streets. It seems that each week brings news of libraries forced to close branches, reduce hours. Libraries without automation are simply less expensive to run. Government grants cannot cover all of the branches with rising technology costs and smaller libraries cannot always afford to pay for the automation costs on their own.

- *Book Budgets:* A higher budget percentage being spent on automated library systems means less money is being spent on books. With bookshelves shrinking, it is less likely to find what you need during your next visit to the library. Library books have a shelf life and sometimes are only kept according to the number of times they are checked out. If academic libraries continue to cut back on their purchase of specialized scholarly books, if they begin to define worth or value in terms of the number of times someone has sought access to it one could imagine a day when every university would have its own "press." The new technology is radically changing the environment in which scholars do their work. The great danger is we will end with a system of scholarly communication which will be technically viable, but not intellectually desirable.

- *Rising Building and Maintenance Costs:* When automated systems are added into a library, FindArticles.com states that added power consumption and the changes in heating and air conditioning needs are seldom planned for when automated systems are installed. The noise and heat of the machines combined with the noise and heat of body heat from extra people, cost more than what the library had been previously paying for the building's maintenance and power costs.

Task Critically examine how library technology provides the best resources for the general public with the help of examples.

Self Assessment

State whether the following statements are true or false:

1. An automated library is one where a computer system is used to manage one or several of the library's key functions.

2. Library automation increases the workload for library staff in terms of cataloguing, circulation and acquisitions.

3. Library automation leads to diminished building and maintenance costs.

1.2 Need and Purpose of Library Automation

Even though this question seems to be very fundamental, it is essential to emphasize this aspect as library automation is yet to take off in majority of the Indian libraries. Secondly, while justifying need for library automation more than cost-effectiveness, the benefits derived by the library users become the major consideration. Since library does not happen to be an economic entity such benefits need to be located at in a different perspective. The multifold increase in information output and usage has posed a problem for librarians and information scientists to handle information in an effective manner. The advances in technology, lowering cost and changes in users' expectations have brought changes in the attitude of librarians to cope with the associated challenges. They are using computers and networks to identify process and retrieve information more speedily and efficiently. This switch over has helped library professionals to serve the risers better and at a lower cost.

Library automation usually covers the following activities and services:

- Library Cataloguing System

- House-keeping operations and networking

- Information Services and products, and

- Access to external information through internet

These could also be called the levels of automation because it is in this order the process of library automation is usually carried out.

The library catalogue or index to the collection forms the base for most of the library activities such as acquisition, reference, bibliographic service, inter-library lean, etc. The users of library card catalogue will appreciate how fast is the retrieval search and printing in automated environment. If the same system is available in network environment, users can have simultaneous access to the same database. From the library staff point of view the cumbersome job of printing the cards and their subsequent filing gets eliminated. Also, it conserves space and save stationary. The second area of automation covers use of a software which can handle all the house-keeping operations of the library such as acquisition, circulation and serial control which can also use the existing network of the institution. Networking of computers within an organization helps the users to browse the cataloguing system from any of the workstations terminals. The third area of automation covers the information services and products. There are many sell-tutorial CD-ROMs available with multi-media effect. Libraries facing high incidence of mutilation of materials will benefit from such electronic products. Also, people doing empirical research can download data and directly taking it to other software platform for analysis and making graphical presentation. Other technology which libraries can make use of is the e-mail system. These not only reduce the recurring expenditure but also are effective and fast. Sending reminders for non-receipt of journals by e-mail has proved to be very cost-effective. In addition to this, sharing of resources among libraries becomes easy. Fee public domain e-mail software is available and there will be no additional expenditure incurred. Subscribers of internet, in addition to getting access to various public domain databases and services will also get free e-mail and fax facility.

Notes Some publishers offer content pages of their journals on internet and libraries subscribing to such journals can also have online access to the full text of the articles. Many academic and research institutes give free online access to their working papers.

Notes

Automation can increase staff productivity. Staff can assist patrons rather than spending large amounts of time keeping track of paperwork, managing patron files and taking inventory of the collection. Plus a good automated system would reduce errors and redundancy within the library system itself. Overdue, lost and missing books can be accounted for more efficiently, assisting the library in recovering costs and managing the collection better.

The absolute bare minimum of automation would include an Online Public Access Catalogue (OPAC) module, a Circulation Module, and a Cataloguing Module. In order for one module to work, it is necessary for the other modules to be functioning.

Example: It would be very difficult for a patron to find new books in the OPAC if there was no way to catalogue new books, and it would be difficult to find out the publications issued out if there is no circulation module.

For effectiveness and accuracy, it is necessary to purchase an integrated system that includes OPAC, Circulation, and Cataloguing modules.

Automation can decrease costs and increase service, no matter how small a library is. While the process can seem daunting and expensive, there are many low-cost vendor systems and cataloguing resources on the market. As well, your small library will probably grow larger in time, and it is better to begin automation early. Equipment and software upgrades can be purchased at later dates as the library system grows. The total workforce involved depends on two factors, the size of the collection and the approach by which one chooses to automate one's library system.

The cost of automation can be broken into three categories: the cost of purchasing the hardware and software; the cost of implementation including retrospective conversion of the manual records; and the cost of ongoing maintenance of the operations. The cost of hardware and software is highly dependent upon a number of factors, including modules purchased, size of the collection and operations and stipulations of the contract. According to Borgman, libraries have been implementing automated systems for the following reasons:

● Improving internal workflows, and sharing cataloguing data;

● Providing access to local library resources, i.e., providing of access to online catalogues; conducting of retrospective conversion activities;

● Providing access to resources outside the library that is providing access to other collections and to other online services for operating bibliographic and other information services, document delivery, online data exchange, and integrating online resources;

● Interoperability of information systems; that is efforts towards real time interaction between computers distributed over wide and local area networks, using various standards, e.g., 239.50, and the World Wide Web protocols.

Did u know? During the 1960s and the 1970s librarians in India were hotly debating whether computers had any place in libraries, just as they discussed – in the beginning of the century – whether typewriters had. Today, the library community as a whole is realizing that computers and information technology, in general, are the tools of the new information era, just like the printing machine with movable types was the tool of an information era which started with Gutenberg in the fifteenth century and lasted until the middle of the last century.

Now, the important question is no longer whether to use the computer or not, but how to use its full potential for providing efficient and speedy information services. For libraries to make

optimal use of automation, a number of conditions must be fulfilled. For most is a profound understanding of the new tool and a fresh look at what the information process is all about - it does not seem to be about books, after all, even if books may always be there. Among the other conditions is a restructuring of libraries to make a better framework for an information service which fully exploits the potential of the new information technology.

We need library automation for the following reasons:

- To cope with increasing demands for services in terms of frequency and speed

- To reduce staff or prevent staff increases

- To improve the efficiency of the clerical and paraprofessional staff

- To provide new forms of old services (electronic access)

- To improve access to existing services (remote login, etc.)

- To provide new (increasingly digital) information services

- Document delivery very fast, frequently online

Self Assessment

Fill in the blanks:

4. The library …………………… to the collection forms the base for most of the library activities.

5. Automation can …………………… staff productivity.

6. The cost of automation can be broken into …………………… categories.

1.3 Library Automation Process

The main steps in the process of library automation are:

Step 1: Preparing for Automation

Preparing for an automated library system needs system evaluation and planning before implementation.

- *Appraisal of Current Status:* Statistics regarding total number of stock, accession of materials, daily issue and return, time taken for routine activities, services given, its effectiveness, etc. were studied to find a true picture of the current status of the library and identified the problems facing by the users.

- *Need Assessment:* Routine library activities such as issue and return of the books take a lion's share of the total time of the library. The librarians were not getting enough time to do added services. So, for acquiring required time for a functional library, automation was necessary. Control over the stock was not adequate. Annual stock verification and generation of monthly library statistics were not up to the standards. An automated system will make the things better. Finding a book from the stack room was time taken. There were no standard classifications or cataloguing schemes. Books were arranged unscientifically. Card catalogues were absent and the users had to go through all the collection to find the wanted one. There was no system to find whether the book was present, issued, if yes, to whom it was issued or when will it return.

- *Cost Evaluation:* The cost contained in every library activity was higher in the case of a manual system. The human cost was many times greater than an automated environment.

In the long run, the cost of work done by a librarian in manual system for routine activities will become less and that can be utilized in giving programmed or individualized information services.

- *Budget Allocation:* Library automation needs a huge initial investment. Administrators should be informed about the urgency and usefulness of the process. The fund for the process was earmarked in the annual budget and extracted from the library allotment. Since it was a onetime investment, it will not hamper the routine book and periodical accession in coming years.

- *Administrative Support:* Strong administrative backing is essential for the process.

Step 2: System Selection (Software and Hardware)

Selecting the right integrated library management software package is very important. The strength of the automation is mainly depended on the quality of the system software. A number of software is available in the market. For the selection certain things should be remembered.

- *Selection Criteria:* The criteria for selection must be user friendliness; portability; after service; Cost and Proper documentation.

- *Advantages of Local Software:* The main advantage of using local software is the promptness in service. Most of the libraries (school, college and research institutions) have been using the software for years. The pricing was reasonable. It was easy to use. Simple user interface and searching facilities are helpful for students.

- *Hardware:* One computer system is used as the server and one as OPAC for the users. A laser printer have been using for printing of labels. The retrospective conversion work needed two computers. Barcode reader (PSC Quick scan 6500) was selected as input device for reading books and identity cards. Other materials such as self-adhesive labels and cello tapes were also procured.

Step 3: Preparing the Collection for the Automating System

To start the technical processing (retrospective conversion), the materials (books, multimedia and periodicals) for the process had to be selected and prepared.

- *Periodicals:* All the periodicals were included in the selection.

- *Multimedia:* Subject and encyclopaedic multimedia CD-ROMs were selected for the process.

Step 4: Implementing the Automated System

The implementation phase consists of retrospective conversion, database of members, operations, statistics generation and training for staff and users.

- *Retrospective Conversion:* The process of converting the bibliographic or documentary details of the existing stock into the machine-readable form is known as retrospective conversion. This technical processing consists of Bibliographical data entry and physical processing. The steps in Bibliographical data entry are:

  1. *Classification:* In library classification, materials are classified according to the subject of their content. The classification system used and being followed is Dewey Decimal Classification, Edition 21 (the most favoured scheme around the world). Here, the subjects are primarily classified into ten main divisions (First summary). Each division is again classified into ten subdivisions and again into ten, according to the depth of the subjects (Second and Third summaries).

Did u know? School libraries required a division of subjects up to the maximum of third summary. The class numbers given on CBSE guidelines for libraries were used as reference. For easy identification, indicators were given to documents such as, R (reference), T (textbook), H (Hindi) and S (Sanskrit).

2. *Cataloguing:* Although the software has the facility of printing card catalogues, there not raised any need of that, since we are using the Online Public Access Catalogue (OPAC).

3. *Indexing:* In the case of books all the entry fields are indexed and searchable where as in the case of periodicals indexing terms were feed into the database.

4. *Barcoding:* In an automated environment every document should be unique and searchable. It is done through bar coding. Barcoding facilitates the searching, circulation and systematic shelving of the concerned document. After entering all the details regarding the documents into the database, barcodes are printed on adhesive labels according to the accession number of the document. For this process we used one barcode software and laser printer.

5. *Labelling:* The barcode label was pasted on the lower bottom of the title page of the book. This has been read by the barcode reader during circulation and stock verification. The second label that pasted on the lower bottom side of the spine of the book is called spine label. It contains Call number (class number and book number), Accession number and library code. After pasting, these labels were covered with cello tapes for more protection.

6. *Shelf arrangement:* The processed books were arranged on the shelves in the stack room according to their call numbers. If more than one books are present with the same call numbers, they were arranged based on the alphabetical order within the call number.

- *Database of Users:* The preparation of the user's database using the library management software was critical. Just like a book which has its unique accession number, a member should also have his/her unique identification. Since, the only unique number for the student was the Admission Number, it was selected.

- *Student's/Staff Identity Cards:* The school identity cards have been also used as the library membership cards. One side of the card contains the barcoded admission number of the student along with instructions. On staff identity cards, the serial number of the staff has been bar-coded, along with his/her personal particulars.

- *Circulation Control:* The user has to bring the identity cards to the library at the time of issue, return, renewal and reservation.

1. *Issue/Return of Books:* When a user comes to the circulation counter along with the selected book from the shelf, the barcode reader reads his/her identity card. Then the system will show the details of the member such as name, class & div., category, books previously issued or to be returned along with the dates. Then the book's details are automatically entered by the barcode reader by reading the barcode label on the title page of the book. The process of issue is completed by stamping the due date on the due date slip. When the book is returned, its barcode label is read by the barcode reader and details such as due date, fine details etc. are appeared. The librarian can now 'return' the book by selecting the required graphic options.

2. *Renewal and Reservation:* Giving the membership/accession number at the circulation section, users can do renewal of the books for an extended period. Books can be reserved by submitting the Identity cards.

Notes

3. *Fine:* The 'loan period' should be fixed at the beginning of the operation (e.g. one/two weeks). Then the system will automatically give the overdue details, when the member returns the book.

- *Serials Control:* The details of the periodicals subscribed by the library were entered into the database such as title, periodicity, subject, imprint, and vol./issue numbers, date of publication and date of receipt. It is searchable by OPAC. The system will automatically generate the missing issues, so that the librarian can send reminders.

- *Multimedia:* The collection details of CDs, ACDs, VCDs, DVDs, etc. are fed into the database. Title, producer, imprint, subject, language, format and duration of the media are entered. Barcode labels (accession number) are pasted on the CD-ROMs so that, they can be circulated.

- *Library Statistics:* Periodical library statistics shows the functional effectiveness of the stock and services. The main statistics that can be generated from the systems are:

  (i)   Monthly stock details (subject-wise, format-wise)

  (ii)   Member information (students and staff)

  (iii)   Weekly/Monthly circulation details (class-wise, member-wise)

  (iv)   Renew/reservation details

  (v)   Overdue and fine details

  (vi)   List of new additions

  (vii)   Details of written off and condemned documents

- *Stock Verification:* Annual stock verification can be done with ease by reading the barcodes of the books and comparing it with the basic database.

Step 5: Networking

The main system where the software has loaded and the data entry has been taking place was kept as server. It has been protected with passwords. The remaining systems in the library including OPACs and the computer system were networked locally. Proper monitoring and maintenance of the network is necessary. Updating of the database should be done when new documents are added.

Step 6: OPAC (Online Public Access Catalogue)

The Online Public Access Catalogue, popularly known as OPAC is the user interface of the automated system. The user gets all information regarding the holdings of the library here.
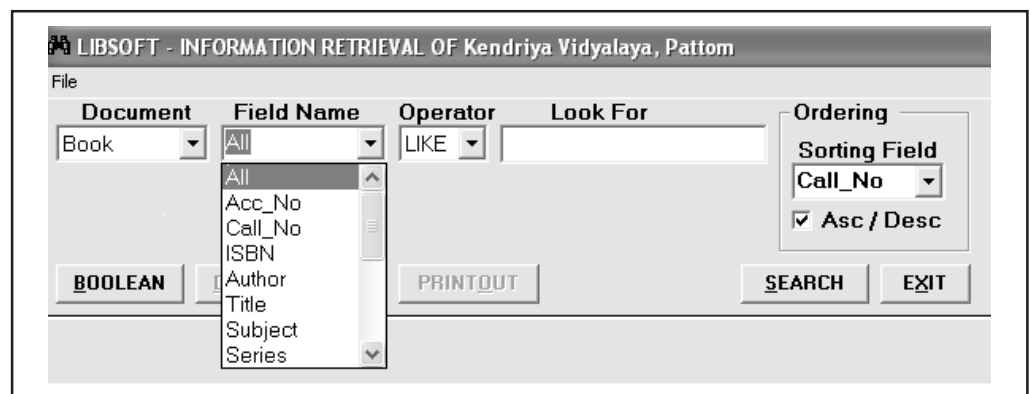
● *Searching OPAC:* Searching the OPAC is very easy. First the user selects the document, which may be a book or a journal or multimedia from the "Document" field. Book is the default document.

The field name can be changed as Acc_No, Call_No, Autor, Title, Subject, Series etc. Then the user has to put the keywords in to the "Look For" box which may be author, title, subject, series, imprint, year, edition, accession number, call number, etc. If the search is by author the fieldname may be changed in to Author and if it is by title, change it to "Title", for example, if we are looking for books written by Agatha Christie, just type Christe, Agatha in the "Look For" box and click "SEARCH". The field name is "All", means every document which contains the term "Christie, Agatha" in any field will appear.
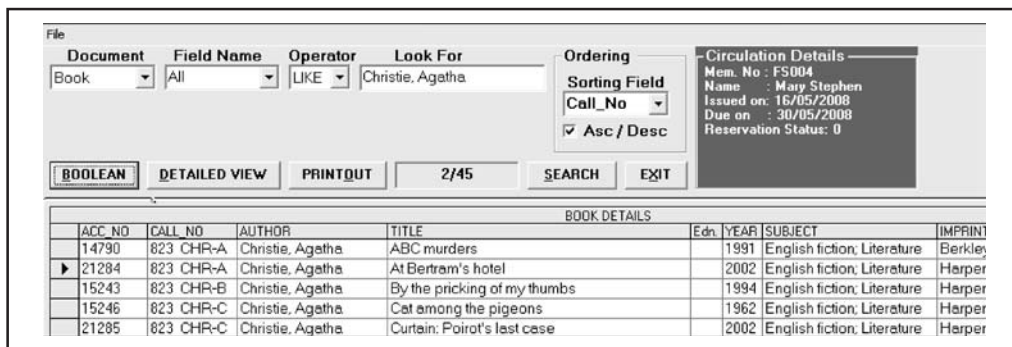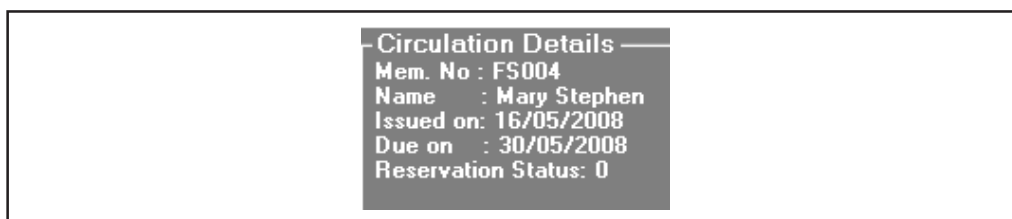

English names are written as surname first whereas Indic names are written as it is.

An option of "Boolean Search" is also given for in-depth search.

By clicking "DETAILED VIEW", we get the detailed information of the document.

The circulation details of the document are also given.

● *Finding the Book-work Flow:* The user noted down the Call No. of the required book form the database. Then he/she goes to the stack room where books are shelved according to their call numbers. Shelf guides are there to help to find the concerned shelf number. From the shelf the user picks the book and brings it to the circulation counter for issue.

● *Back-up:* The backup has been taken in fixed intervals. The database is copied on CD-ROMs as to avoid unexpected system crashes and data losses.

Step 7: Staff Training and User Education

The librarian should be well trained in the overall management and maintenance of the automated system. He will get initial training from the software vendor and has to continuously update it according to the changing user needs and technology. In this case the librarians got training from the company. Training sessions on the automated library system (mainly, OPAC search, finding the book, circulation, etc.) are conducted for the users. These skill development programmes can be organized during the library periods. For staff members special time slots should be planned.

Step 8: Evaluation

The system must be evaluated for its currency and effectiveness periodically. User studies can be conducted to assess the effectiveness of services. Real time oral interviews with the users and observation techniques can be used. The shortcomings should be identified and clearing measures be taken. A suggestion book may be kept in the library to express user's views.

Step 9: Planning for the Future

Library is a growing organism. As the technology changes in the field of information storage and retrieval, the user needs are also changing. There should be planned Library programmes which will incorporate the future needs.

Self Assessment

State whether the following statements are true or false:

7. Statistics were studied to find a true picture of the current status of the library and identified the problems facing by the users.

8. The process of converting the bibliographic or documentary details of the existing stock into the machine-readable form is known as Circulation control.

9. The Online Public Access Catalogue is the user interface of the automated system.

1.4 Challenges in Library Automation

There is the challenge of optimally utilizing small fund allocation to address wide segments of the automation areas. The committee handling the project had to accommodate areas not budgeted for and yet not compromising quality job delivery. Library automation is a great enhancement for your library, but it comes with plenty of headaches. It is a time-consuming process. Libraries may struggle to have the proper technology for the automation. Staff and patrons may need a lot of training to properly operate the new system. Once the automation is completed, users will recognize many benefits.

● *Time:* Library automation takes time. Before the automation takes place, libraries should take time to assess these elements: budget, demographics of the patrons, library

environment, collection and available equipment. This analysis helps the library make the right choices during the process of selecting automation software and equipment. Weeding out is another time-consuming element of the process. According to the Colorado Department of Education, "the more titles you have to create records for, the more pricey your project is going to be." Therefore, you should take the time to thoroughly weed through your collection before the automation.

Data migration also takes time. Any existing records must be transferred to the new system. If you are upgrading from a manual system to an automated system, the circulation information must be entered into the computer. Finally, you might have to change some collection and patron bar codes during the automation process. This can involve some tedious hours of handwork to make everything work with the new automated system.

- *Technology:* Technology is another hurdle to cross while automating your library. When selecting library automation software, you must make sure it will work with your existing equipment or be financially prepared to purchase upgraded technology. Analyse the librarians' workstations, patron access points, network server, Internet access and building electrical system. Some libraries may require minor technological upgrades, while others will require an expensive technological overhaul.

Notes The technology team, or lack of one, can be another challenge of library automation. A library needs a strong technology support system in place prior to automation. Someone needs to oversee the automation process and troubleshoot any software or hardware problems. Once the system is in place, the technology team will need to continue to monitor and upgrade the system.

- *Training:* Training your staff and patrons to use a newly automated system can be challenging. According to the Colorado Department of Education, "Training is expensive and you can never pay for enough." If your staff is unfamiliar with computerized library management software, they will need many hours of training to feel comfortable operating the system. A select number of staff will also need training to manage specialized operations, such as cataloguing or patron record management. Additionally, patrons will need assistance using the system to search for library materials. Some patrons may be reluctant to change to a new system, especially if they don't like computers. With proper training and plenty of support, users will adjust to the new system.

Self Assessment

Fill in the blanks:

10. The more titles you have to create records for, the more .... your project is going to be.

11. .... your staff and patrons to use a newly automated system can be challenging.

12. If you are upgrading from a manual system to an automated system, the .... information must be entered into the computer.

1.5 Library Automation Trends

Using computers to assist in information processing began experimentally in the 1960s. In the 1970s most libraries that attempted computerisation used the computer of the parent body, or a

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mainframe system over which they had no direct control. The 1570s saw the growth of cooperative services and resource sharing among libraries. In the early 1980s turnkey systems (where one supplier offers complete hardware, software, installation, training and maintenance) became prevalent. The significant drop in prices and impressive increase in power of microcomputers made microcomputer-based systems available by the mid-1980s. The 1990s saw the microcomputers (Personal computers – PCs) entering a large number of libraries in the country. Also, multipurpose machines like printer-cum-copier-cum-fax have come into the market. Libraries no longer need to have separate computer printers, photocopiers, and fax machines. One device can handle all the above applications if the right interfaces are built in. Such machines are very cost effective for libraries.

The focus in library automation now is on interconnecting systems, information resources, and users. Expected developments in the future include increasing use of networks and the Internet. Interconnectivity of systems is possible, based on 235.50. Even Requests for Proposals (RFP) and Request for Bids (RFB) issued by different organisations for their projects are available online.

The libraries rapidly evolve into something that looks quite different than it did just a few decades ago. It is critical that librarians not only become aware of this evolution, but that they actively intervene to help reshape their libraries in ways that are consistent with the core mission of the respective organisations. The integrated automation of basic internal processes such as acquisition, cataloguing and circulation has produced very large efficiency gains. The almost universal use of shared bibliographic data, loaded into local systems from a variety of external sources, has also been a major time-saving development, and has also produced in in any cases improvements in the quality of data on offer to users. OPACs have also fulfilled a good deal of their potential. The software have travelled through the technological advances from DOS, UNIX, Windows, LINUX operating systems, and now on to online networks and the WEB, providing applications for every environment. The library automation system whether the software package came from Libsys, SLIM++, TLMS, Easylib, SOUL or any of the other major suppliers, has become the centre of attention of the librarians and of high expectations of library users. Library automation, which started in late 1970s in a few special libraries, has now reached majority of the university libraries and many college and even school libraries. It is however yet to be reach majority of the libraries of colleges and schools and public libraries.

Self Assessment

State whether the following statements are true or false:

13. The 1980s saw the microcomputers entering a large number of libraries in the country.

14. The focus in library automation now is on interconnecting systems, information resources, and users.

15. The significant drop in prices and impressive increase in power of microcomputers made microcomputer-based systems available by the mid-1980s.

Case Study   **Automation of A.T.E.C. Central Library**

The automation of libraries and information centres in India started in middle 1950's till 1980's the concept of automation was centred on the use of computers for housekeeping operations and information services by individual libraries. There are certain factors responsible for the automation of the libraries such as information

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explosion, increased user's demand, labour-intensive nature of work, changing concepts of documents. Application of modern management techniques reduced response time and need for resource sharing are important elements. With the tremendous capabilities of computer, libraries started using computers for the in-house operations.

The library is the lung of every educational institute which breathes knowledge and information into the minds of the students. The Agnel Technical Education Complex has a well-equipped Central Library with an elaborate collection of books, journals, project reports, AV-materials and other resources to serve its users.

The A.T.E.C. Central Library came into existence in the year 1983. The Central Library is equipped with a good no. of national and international books, journals in the field of Engineering, Humanities, Physics, Chemistry, Mathematics, English, Management, Research Methodology and General reading, etc. and also with the modern and latest technology to cope up with latest development to provide quality and quick services to its users. The main objective of the Central Library is to support staff and students of Engineering, Polytechnic, ITI and Management with the view to provide up-to-date knowledge.

Table 1: Statistics for the Year 2000–2001	
Books	19,422
Journals	112
Bound Volumes	941
ISI Codes	650
Inplant Training/Project Reports	3167
AV-Materials	08
CD-ROMs	140
Floppies	117
Charts	03
Transparencies	154

Library Staff: A.T.E.C. Central Library has good team of qualified Professional, Semi-professional, Non-professional Staff.

Library Services: A.T.E.C. Central Library is providing the following services to its users:

- Circulation

- Reference Service

- Current Awareness Service

- Reprographic Service

- Audio-Visual service

- OPAC

- E-mail and Internet

- CD-ROM Database

- Inter Library Loan

- Intranet

Agnel Technical Education Complex is one of the first institutes in Navi-Mumbai to have a computerized Library. Computerization started since 1995 and built a complete database of over 20,000 books, 1000 Current and Back Volumes of journals and reports. Further we have Online Services provided to our users through our INTER LIBRARY LAN SYSTEM consisting of 7 terminals connected to the Main Library Server storing our database. The ONLINE PUBLIC ACCESS CATALOG (OPAC) is used to carry out online searches of library database by Author, Title, Keywords and Accession Numbers which enables users to provide good reference service to staff and students.

INITIAL STAGE: FOXPRO 2.6

1. *Book Search:* In the Initial Stage, there exists a computerized as well as manual search for books. The computerized searching can be done title-wise or author-wise. The user has to first logon to a terminal connected to the network. The interface is not a true graphical interface and is not very user friendly. The manual searching is done with the help of cards. Each book in the library is represented by a card, which contains the title, author, subject and its location. All these cards are kept in the library so that the member can go through the list of titles that are available in the library.

2. *Circulation of Books:* The process of issue and return of books is manual. Each book has a card associated with it. When the book is issued, the member's roll-no is entered on the card along with the date of issue. The date of return is also entered along with the issue date. The library card of the student is then kept along with the book-card at the issue counter. When the member returns the book the date is compared along with the actual date the book was to be returned and the fine if any is calculated. The library card is returned to the member who can issue another book.

3. *Fine Calculations:* The fine calculation is manual. When a book is returned the date is compared with the return date on the book-card. If the book is returned late then a fine of 50 paise per day is charged. If the late period increases beyond seven days, then a fine of ₹ 1 per day is charged. The maximum fine that can be charged is ₹ 100.

4. *Entry of New Books:* The process of entry of new books is computerized. It is done using Microsoft FoxPro. The book details are entered in a form and then stored in the database. If many copies of the same book are purchased, each copy has to be entered separately. This process is time consuming and tedious.

5. *Drawbacks of the Existing System:* The existing system has many drawbacks, which can be listed as:

   ❖ The process of issue and return of books is manual and time consuming.

   ❖ The fine calculation is manual and hence prone to mistakes.

   ❖ The interface for searching of books is not user friendly.

   ❖ The book search facility is slow and does not always give correct results.

   ❖ The entry of new books is time consuming and tedious.

   ❖ There is no provision for the members to recommend any books.

   ❖ There is no provision for the members to reserve books.

SECOND STAGE: MYSQL/PHP

Before embarking on the project, various technologies, programming languages, candidate platforms and software were studied in order to be able to select which were the most appropriate choices for the proposed system. This was done by reading books on each subject, surfing the internet for information and seeking the expert opinion of experienced people in the IT industry.

1. *Platforms:* Three possible candidate platforms for the server were available:

   ❖ *Unix or Linux based:* Linux or Unix Operating System; Apache Web Server; PHP script, CGI programming with Perl, etc.

   ❖ *Microsoft – Windows NT based:* Windows NT server 4 Operating System; Internet Information Server and Active Server Pages

   ❖ *Servlet Based:* Either Windows NT Server or Linux Operating System; Java Web Server and Java Servlets

   The application for the entire library system is to be implemented over a client server setup having one server and five clients. The server and clients are to be implemented on Pentium machines running Linux or Windows NTTM Server.

Reasons why above technologies were selected:

1. ***All Software Packages Are Free:*** The principal software packages used are Linux, PHP, MySql, Apache Web Server. Most of these packages are distributed with the GNU public license, which means that they are free. Some of these packages are also open source software, which means that their source code is also freely available.

2. ***Compatibility:*** PHP (scripting language), MySql (database), Apache Web Server are native Linux based software. They were originally created for Linux or Unix based systems. The integration between them is totally seamless.

3. ***Documentation and Support Easily Available:*** All the above mentioned software has tremendous resources on the Internet. Documentation is provided at all the respective sites. Since the software is free, support is also available freely with no time limits or extra charges for providing support. In addition there are many other sites offering forums for discussion and mailing lists.

4. ***Security:*** Linux operating system was created for building a system that would have security even in a multi-user environment. Security comes in-built with Linux so no additional software is required for providing security. Till today there are almost no viruses for a Linux based system.

   Apache provides security through its client server interface. Automatic data encryption can be provided through use of SSL. PHP can also be used to provide security by verifying a user's access that is stored in a database.

5. ***Stability:*** Linux is built to ignore breakdowns in parts of its operating system and continue to run without a system shutdown. Also bugs can be fixed while the operating system is running, this is required in server. Linux's inherent stability along the seamless integration of all other software on it makes the entire system very stable.

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Client–Server Model

The Client Server model is suitable for systems that are smaller in size and less resource hungry on the server side. This system is suitable especially within an organization. Multiple clients can submit requests for service or for some processing to the server. The server executes the requests or performs the processing and then passes the results back to the respective client. Here, the request submission – processing – returning of results takes place transparent to the user sitting at the client terminal. Since all applications are run on the server, there is a good amount of security and protection to the application programs from any possible attempt to tamper with the system from the client side. There are several advantages of implementing the system using the Client–Server model

● The system will be fully functional as soon as the server is setup and connected.

● No additional client side installation of software is required except for the basic operating system. By just typing the URL of the site the application will be available to him/her.

● The system will be platform independent on the client side i.e. the system will be accessible to all users, irrespective of the operating systems they are using.

● The system has a good amount of security that is inherent in the client server model, also additional security can easily be provided.

● The system can be easily extended to the Internet to make it available to remote users, and with minimum additional setup.

The server setup will consist of Linux Operating System along with the accompanying Web Server i.e. the Apache server. To handle the data required to be stored on the system MySQL has been chosen as the Database Management System. To perform the entire HTML embedded scripting operations PHP has been chosen for scripting operation and the generation of pages. In addition JavaScript was also used for some additional features.

1. *MySQL:* The main factor in favour of MySQL is that it is available at no cost and is freely downloadable from the Internet. If one is looking for a free or inexpensive database management system, several are available from which to choose: MySQL, mSQL, PostgreSQL, etc. But MySQL, one of the most popular databases, has many advantages. MySQL scores over other databases as described below:

   ❖ Speed

   ❖ Ease of us

   ❖ Cos

   ❖ Query language support

   ❖ Capability

   ❖ Connectivity and security

   ❖ Portability

   ❖ Open distribution

   ❖ Easy connectivity with PHP

2. *PHP:* Many web sites contain static content, such as academic papers or articles. These sites' pages are documents consisting of simple text, images, and hyperlinks to other documents. For this type of web site, simple client-side technologies generally suffice. HTML and Cascading Style Sheets (CSS) provide the means to

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structure and present page content, and JavaScript allows one to spice it up a bit if desired. Increasingly, however, the Internet and intranets are being used for applications, most of which incorporate databases. These sites and applications are dynamic, because their content will vary according to the data involved and the actions of the user. This is where PHP comes in. By running PHP programs on the server you can create very powerful applications that interact with a database and generate content dynamically.

Questions:

1. Write down the case facts.

2. What do you infer from it?

Source: Adapted from http://drtc.isibang.ac.in:8080/bitstream/handle/1849/61/Paper-EF.PDF? sequence=2

1.6 Summary

● Library automation is the process which needs proper planning, timely implementation and periodical evaluation.

● Automation is used to reduce the amount of staff time devoted to repetitive (and often less challenging) activities that must be done in any properly functioning library.

● Library automation is the application of computers and also connected tools to the processing of data in a library or libraries.

● The library catalogue or index to the collection forms the base for most of the library activities such as acquisition, reference, bibliographic service, inter-library lean, etc.

● The focus in library automation now is on interconnecting systems, information resources, and users.

● The librarian with the administrators has to set the priorities after analysing the current status and future requirements.

● Selection of the suitable integrated library management package according to the needs of the users and the library is important.

● Retrospective conversion, OPAC, circulation and serials control, etc. should be conducted with care.

● Staff training and user education are keys to the success of the process.

● Library automation invites pragmatic approach.

1.7 Keywords

Appraisal: Impartial analysis and evaluation conducted according to established criteria to determine the acceptability, merit, or worth of an item.

Automation: Automation is the use of machines, control systems and information technologies to optimize productivity in the production of goods and delivery of services.

Barcoding: Bar coding is the most common form of automatic identification used in automatic data-capture technologies.

Budget Allocation: Budget allocation is an important part of all business and not-for-profit financial plans and is typically set annually and involve allocating anticipated income and resources between different departments and business interests.

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Hardware: The physical components of a computer that can be seen and touched by a user.

House-keeping: General care, cleanliness, orderliness, and maintenance of business or property.

Indexing: Indexing is the process of creating indexes for record collections.

Labelling: Display of information about a product on its container, packaging, or the product itself.

Library Automation: Library automation is the application of computers and also connected tools to the processing of data in a library or libraries.

Maintenance Costs: Maintenance costs are often used to compare maintenance performance between companies or between plants within the same company.

Multimedia: Multimedia is media and content that uses a combination of different content forms.

Need Assessment: A needs assessment is a systematic process for determining and addressing needs, or "gaps" between current conditions and desired conditions or "wants".

Periodicals: Periodicals are publications which are issued at regular intervals, such as journals, magazines, and newspapers.

Retrospective Conversion: The process of converting the bibliographic or documentary details of the existing stock into the machine-readable form is known as retrospective conversion.

Software: Software is a general term for the various kinds of programs used to operate computers and related devices.

1.8 Review Questions

1. Define Library automation.

2. What are the objectives of Library automation?

3. Discuss the advantages of Library automation.

4. Explain the disadvantages of Library automation.

5. Describe the need for Library automation.

6. What do you understand by Retrospective conversion?

7. Write brief note on OPAC.

8. Discuss the stages of Library automation.

9. Explain the Challenges in Library Automation.

10. Describe various trends that have taken place in library automation.

Answers: Self Assessment

1. True
2. False
3. False
4. Catalogue or Index
5. Increase
6. Three
7. True
8. False
9. True
10. Pricey

11. Training   12. Circulation

13. False   14. True

15. True

1.9 Further Readings

Books

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Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Online links

http://libraryjobs.jobsnoexperiencerequired.com/advantages-and-disadvantages-of-library-automation/

http://librarykvpattom.files.wordpress.com/2008/07/library-automation.pdf

http://librarynext.wordpress.com/category/library-automation/

http://www.clib.dauniv.ac.in/E-Lecture/Library%20Automation.pdf

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Unit 2: Functions and Requirements of Library Automation

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Objectives

After studying this unit, you will be able to:

- Discuss the functions of Library Automation

- Explain the basic requirements of Library Automation

- Describe the factors for Library Automation

- Discuss the areas and services of Library Automation

Introduction

The utilization of computer and related techniques make the provision to provide the right information to right reader at the right time in a right form in a right personal way. Automation of library activities provides the services very efficiently, rapidly, effectively, adequately and economically. The modern libraries and information a centre facilitates free communication because access to information has become a fundamental right of the clientele. The automation is economically feasible and technologically required in modern libraries to cope up with the requirements of new knowledge, the enormous increase in the collection of materials, problems of their acquisition, storage, processing, dissemination and transmission of information. The capabilities of computer associated peripheral media and its application in library activities and services led to a highly significant quantitative and qualitative improvement especially in online technology.

2.1 Functions of Library Automation

Main functions of Library Automation are as follows:

1. *Cataloguing:* Cataloguing is facilitated and coherence of data guaranteed. Most fields can contain several million characters and some can contain images such as a document's cover or photographs of readers.

2. *Subject Headings:* The content of your documents is analysed by allocating controlled subject headings. One subject heading can refer to another (in the case of synonyms or comparable concepts, for instance). Authority lists can then be printed.

3. *Searches:* BiblioMaker has several very powerful search functions. Here are some search samples, which you will be able to conduct without difficulty:

   ❖ Books by a given author

   ❖ Novels for which you only remember one word of the title

   ❖ Non-fiction books on a specific subject

   ❖ Acquisitions made in the last three months

   ❖ DVDs from a given publisher as of a given date

   ❖ All the comic books of a given series

   ❖ Press articles on a specific subject published by a given journal

   ❖ Readers living in a given district

   ❖ Readers who should receive a subscription renewal request

4. *Public Search:* One of the main purposes of a catalogue is to be consulted by readers. The ergonomy of the «Public Search» function was carefully designed for all types of readers, including those who are not used to computers. The user-friendliness of the public search stems from simple and uncluttered screens, clear explanations at every step of the search and the elimination of non-essential options.

5. *Digital Titles:* The application can manage digital resources, such as web site addresses, desktop documents, images, sound files or animated sequences. These files are associated to title records. When consulting the record, the reader can click on the link connecting to the digital resource, which will then appear on screen.

6. *Settings:* With the help of numerous options, the software can easily be configured to meet your specific needs that is types of documents in your catalogue, duration of loans, default values, automatic numbering, access authorisations that is all these parameters and many more can be set by checkboxes, using local menus or radio buttons. Thus there is no need to enter complicated formulas or to modify unclear configuration files. Of course, most of the choices made during setup can be modified later on.

7. *Classification:* Classification of your library can be managed directly within the application. You are free to add, modify or delete classmarks whenever needed, for instance in case of a reorganization of your shelves. The software comes with the Universal Decimal Classification (UDC). Other systematics can be obtained upon request.

8. *Series:* Publisher series are managed in a dedicated index. This way, you ensure that there are no double entries. It also allows you to easily establish a list of titles belonging to a series, in order to identify possible gaps.

9. *Printing:* Many standard print layouts are available to you:

   ❖ Catalogues (for instance lists of new acquisitions or bibliographical lists)

   ❖ Barcode labels

   ❖ Number of loans of a title

   ❖ Titles belonging to a series

   ❖ Class marks list

❖ Inventory list

❖ Addresses labels

❖ Readers' list with phone number

10. *Addresses:* Readers, suppliers and other contacts are all registered in the same address database. Numerous fields allow precisely recording all necessary information, such as postal and e-mailing addresses, telephone numbers and data that can be used for statistics: category, birth date, and gender. You can simply and rapidly send an e-mail to your readers, should you desire to inform them about an event your library is organising, or to advice of a change in opening hours. The application can account for reader contributions and automates subscription management.

Self Assessment

State whether the following statements are true or false:

1. Cataloguing is facilitated and coherence of data guaranteed.

2. Readers, suppliers and other contacts are all registered in the same address database.

3. Digital titles are managed in a dedicated index.

4. BiblioMaker has several very powerful search functions.

2.2 Basic Requirements of Library Automation

For automating a library, the decision to select or reject a particular set up, hardware and software has to be taken based on several considerations actual requirements of the library. The basic requirements of Library Automation are as follows:

1. *Library Collection:* It can range from a few thousands to a few lakhs or to crores. The kind of document backup and storage device required will depend largely on the size of its collection. The options before a library ranges from going in for PCs with hard disk drives – whose storage capacity now is around 4–8 gb and a PAH size of 32–64 mbs, or for other higher-end systems with hard disc capacity ranging from 20–40 gbs and higher RAMs. For archival storage there are a wide range of secondary storage options available such as – CD ROM backup, cartridge tape drive, DVD ROM (Digital Video/Versatile Disc), and DATs. The size of a library collection will have an overall effect on the system selected for all other services of a library.

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Caution In a sense, the huge document collection may not only result in the selection of a system with adequate hard disc and back up capacity, but also related services like cataloguing will have to be selected and developed keeping in mind the size and in turn an increased RAM speed for quick access and transactions.

2. *Number of Users:* The library has an option of going in for a few standalone systems if they are catering to a limited number of users in a small setup, or connecting standalone into a network, or if the users are distributed, say within a campus, and need to access the library almost 24 hours then the library may decide to go in for a server with terminals distributed around the campus.

3. *Number of Transactions:* The more the number of transactions expected in a day, the higher should be the RAM speed and the speed of the backup storage devices. Transaction could be records of books processed, number of serials registered, number of books/periodicals

issued, reminders to borrowers or vendors etc. so that the system will act as a supporting and speed enhancing device rather than hindering the activities and creating artificial bottlenecks.

4. *Types of Services Offered:* The library needs to identify the services it is planning to provide. This will have a direct impact on the system to be selected.

Example: Whether the library is planning to provide; say current additions to the library and other current awareness services. When a wide range and complex variety of services of very high quality in terms of speed, timeliness, accuracy and reliability are planned by a library, they will have to decide on tried and tested a system – both hardware and software – which is known for its quality durability and speed. On the contrary if the library has only few routine services lined up. Then they can afford to be more adventurous and experiment with systems and software.

5. *Automation and Data Processing:* The quantum of information to be acquired, processed, housed, circulated by libraries has increased. Computers and other information technologies offer an efficient and effective tool for handling the burgeoning knowledge problem. A rapidly expanding and more literate population has generated demands for reader services that have far exceeded a library's ability to respond effectively with traditional methods and techniques. The emerging information society has realised the importance of information and knowledge, thereby emphasizing the critical role libraries play in dispensing information. Users in turn have begun to expect more and more from the libraries today. Furthermore, computers have made users to expect better services from all social institutions including libraries. Majority of the tasks performed in library operations involve the intensive use of human resources. The tasks are routine and repetitive in nature. To illustrate, take the example of a bibliographical record of a book. The bibliographical details of the book like author, title, imprints information, etc., are required to be recorded in many different operations such as book selection slips, book ordering, invoicing, accessioning, cataloguing, shelf list preparation, circulation, etc. A variety of files are generated and maintained in libraries.

Example: In the acquisition section, books on order, books received, books recommended, etc.

In the circulation section also files like user file and transaction files are created and maintained. The catalogue the most important and highly useful tool is a surrogate file of the entire library holdings. These files need constant updating. Modern management techniques are being increasingly applied to library work. The main thrust of a modern management technique is their emphasis on quantitative data. Consequently the demand for collection of accurate data of library use and other data is increasing. Many of the modern techniques like informatics, operations research, etc. can only be contemplated if the library data like circulation statistics are computerized. The queries posed to library records, files and systems are manifold. These files and records are helpful in answering queries. Traditional methods of record keeping are inadequate in answering queries quickly; the need for reducing response time is being increasingly recognised.

Did u know? Today library automation is thought of as a means of enhancing the library's ability to satisfy users by providing timely answers.

Library cooperation is one of the finest and oldest traditions of librarianship. Pressures of inflation, budgetary cuts and information explosion are forcing librarians to form networks

Notes

and consortia with a view to resource sharing, the use of modern data processing and modern communication technology offers a new dimension to cooperation among libraries. The developments in library automation efforts may be summarized as a classic case of need pull and technology push.

6. *Turnkey Systems:* The turnkey system is a complete system, installed by a vendor on the library's premises. Turnkey means that the library just turns the key and the system operates. The vendor of turnkey systems supplies the hardware and complete packaged software and is responsible for dealing with any problem in the system. In the turnkey system the library staff could make the desired changes on the assumption that they possessed the necessary experience and qualifications. The most common examples of turnkey systems at present are minicomputer based integrated library system. They perform almost all housekeeping jobs as an integrated unit.

Task Critically examine in what way automation is helpful for libraries.

Self Assessment

Fill in the blanks:

5. The kind of document backup and storage device needed will depend largely on the size of its ……………………

6. The more the number of transactions expected in a day, the higher should be the …………………… speed and the speed of the backup storage devices.

7. Majority of the tasks performed in library operations involve the intensive use of ……………………

8. The …………………… system is a complete system, installed by a vendor on the library's premises.

2.3 Factors for Library Automation

Following are the factors for Library Automation:

1. *Growing Information and Shrinking Space:* The enormous growth or information explosion of literature in each area, subject in number and size and results fragmentation of literature and increasing specialization in every field of knowledge. Due to this information explosion, the quantity, variety and complexity of information are being increased rapidly in every field. Computer application can solve this problem, as it is capable of storing huge bulk of information on tiny storage mediums i.e. a CD-ROM can store the text of the complete set of Encyclopaedia Britannica. Serials, abstracts, indexing periodicals etc. are already available on CD-ROM.

2. *Incensement of Users and Organizing the Flood of Information:* Increasing the number of clientele of library and information centres and their specialized desires forces us to change the method of organizing information because traditional methods is going to become inadequate. The manual method has serious limitations and, facing problem to provide access to reader's information that is available in a wide of publications from so many sources.

3. *Cost Hike of Printed as well as Electronic Reading Materials and Resource Sharing:* The rapidly enhancement price of information materials motivated the library and information

centres to share their resources. They realize that the only way they could fulfil their client groups is by effective cooperation between libraries, information centres and networks and by sharing of all type of resources.

4. *Enhancement in Budget:* As increasing the members of the library, cost of information materials, services and growth of information or information explosion, the budget of the libraries is also raised. That is also allowed us to automate the library activities and make maximum utilization of the library funds.

5. *Non-availability of Suitable Software:* Non-availability of suitable software has also played an important role. Though there is a number of software available for library management but most of them are non-standard. The main reason behind, most of the software has been developed without the help of a qualified librarian. As a result there was a stream of non-standard software. Some of these soft wares have been developed by big corporations like CMC but have not been proved very successful.

Notes The software developed by institution could not be successful as they were lacking in marketing and after sales service. The librarian is confused as he is not in a position to decide what to select.

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6. *Geographical Location:* Geographical location of an institution also played a very important role. The institutions near to a metro city were benefited by the availability of the resources. They were having better approach to hardware and software market and also the manpower for data entry. They were having approach to better training facilities. Hyderabad is a good example which can be cited.

Self Assessment

State whether the following statements are true or false:

9. Serials, abstracts, indexing periodicals etc. are available on CD-ROM.

10. The enhancement price of information materials motivated the library and information centres to share their resources.

11. The institutions near to a metro city were not benefited by the availability of the resources.

12. The software developed by institutions could be successful as they were lacking in marketing and after sales service.

2.4 Areas and Services of Library Automation

Library automation is generic term used to denote the various activities related with the location, acquisition, storage, update, manipulation, processing, repackaging or reproducing, dissemination or transmission or communication, an improving the quality of products and services of library and information centres. It enhance the speed, productivity, adequacy and efficiency of the library professional staff and save the manpower to avoid some routine, repetitive and clerical tasks such as filing, sorting, typing, duplication checking etc. on which we can conserve costly professional manpower for technical service and readers service. The main activities and services of library automation are given below.

1. *Information Resource Building:* Acquisition of books, monographs, audio-visual, electronic materials such as CD-ROM, maps and so on. There are some specific functions of an acquisition process.

Notes

Suggestion, recommendations and selection of library collection:

❖   Duplication checking, library holding checking.

❖   A vender selection.

❖   Preparation of order, cancellations of order lists with terms and conditions of the supply. Checking of overdue orders.

❖   Record of items on order.

❖   Record of received and non-received items and receipt to the vender.

❖   Items verification with order file and invoice.

❖   Inspection of items by the concerned department.

❖   Prepare for payment after accessioning.

❖   Prepare budget and maintain accounts and statistics subject wise etc.

❖   Final report. Items, subjects wise, chronologically, booksellers report etc.

Creation of bibliographic databases has become one of the essential and key activities of library automation. The search process on a computerized database has many advantages over search from a catalogue by manual methods in term of speed, and accuracy. Any library or information can create first a set of machine readable records of its holdings, based on a structured format, or using a database package like the CDS/ISIS.

2.   *Data Entry:* Database is required for each:

❖   Books

❖   Clients/members

❖   Serials

❖   Audio-visual

❖   CD-ROMs, Floppies

❖   Gifted items

❖   Maps, Reports etc.

3.   *Classification and Cataloguing:* Cataloguing includes the job of describing, recording and displaying details of the holdings of the library. Computers are used to aid in the production, maintenance and updating of catalogues. The quality of the catalogue depends ultimately on the cataloguer. In other words, initial input data is still the cataloguer's work.

Bibliographic details are gathered from relevant sources or from the acquisitions system. Usually there is one main or master file for the holdings of the library, and a temporary file for cumulating the additional records, because printing the master file is done only once in a while.

After initial input of the records, the computer can perform simple tests on the record structure, and errors can be located and checked. Again, if a basic record structure of a package format as that of the CDS/ISIS is used, entry of data becomes a very simple process. The computer can be asked to generate added entries, if required, which can later be sorted into the main file. Separate listings for authors, subject and key points of access can be created. A postings file and an inverted index help the computer search and display record relevant to a specific query. It thus, includes:

❖ Catalogue card production.

❖ On-line cataloguing.

❖ Duplication checking of catalogue cards.

❖ Production of duplicate catalogue cards.

❖ Preparation of authority file subject heading list.

❖ Shorting, checking and filing of catalogue cards.

❖ Automatic generation of added entries (author, title, series etc.). Generation of monthly accession list.

❖ Developing centralized and on-line cataloguing.

4. *Circulation Control:* This is one library service that is most accessible to computerization. The advantages are especially seen in the amount of time saved in issue and discharge routines, and the avoidance of bottlenecks, which are the basic of any library.

   Circulation systems using computers have the details of the book issued and the person borrowing it is entered on files. Dates of return are on the basis of the period of loan (one week, a fortnight etc.). Daily check of the files will identify what books are due or overdue and notices can be typed and sent to the users who have borrowed them. Provision for reservation data will make it possible to pick out these books for which there is a request and a user can be asked to return that particular book.

   The circulation process in a computerized system depends on giving unique identification codes to books and to users. An accession number or a call number can be used as this is a unique identification key for a book. Users can be given individual identity codes. It thus, includes:

   ❖ Registration/cancellation and make bound time for membership.

   ❖ Issue, return, renews reservation of documents and produces the slip for proof.

   ❖ Charges for late, lost book, binding and production of penalty slip.

   ❖ Maintenance of circulation statistics.

   ❖ Inter library loan.

   ❖ Use of bar code system.

   ❖ Report statistics of circulation.

5. *Serial Control:* Serial control through the use of the computer is perhaps one of the most complicated tasks of housekeeping. This is perhaps because of the literally unpredictable nature of serial publications. It thus, includes:

   ❖ Input essential serials data.

   ❖ Order list of new serials.

   ❖ Mode of payment, prepare for payment.

   ❖ Receipt and updating the records.

   ❖ Receipt to vendors or publishers.

   ❖ Preparing the list of present holding, additions, missing, cancelled serials.

   ❖ chronologically, subject-wise etc.

❖ Renewal and cancellation of present subscriptions.

❖ Sending reminders and follow-up of missing issues.

❖ Binding control.

❖ Accession register of bound serials.

❖ Prepare budget and maintain accounts statistics such as subject wise, binding etc.

6. *Documentation and Allied Services:* Documentation and allied services includes the following:

❖ Indexing and abstracting of micro and macro documents. Thesaurus construction.

❖ Compilation of union catalogue.

❖ Bibliographic control.

❖ Current awareness services.

❖ Literature search.

❖ Selective dissemination of information.

❖ Newspaper clippings.

7. *Information Retrieval:* Users can search the database through key terms of author, subject or title, which are formulated into a search expression using Boolean operators (logical connections AND, NOT OR). Computer will display relevant terms/records that match the terms of the user's request. Current Awareness listings, Selective Dissemination of Information (SDI) and retrospective searches are the services where the computer capabilities can be used very effectively. Index generation is another area where computer are generally of use. Computer can be used to format the entries in a permuted index and also to generate the entries for an index. Keywords can be derived from the bibliographical description, or assigned to describe the document (subject keys) and then put into the required format. KWIC indexes for instance, can be produced from titles of documents, with keywords and content generation performed by the computer. Stop lists of put forward lists prevent words like 'a', 'the', 'of', etc. from being used as the key terms. Fully automatic indexing can also be done through statistical analysis and word frequency counts with weighting, provided the text is machine-readable form. It thus includes:

❖ Database creation and maintenance, interactive searching, saving of in house as well as external databases.

❖ Search and print outs of quires against specified requirement.

❖ Such as about the books (issued, reserved, lost, overdue, weed-out), members ship, inter library loan, penalty charges, periodicals, newspaper clippings, reports etc.

❖ According alphabetically, chronologically, subject-wise, members-wise, keywords with each particular such as accession no-wise, title, author, call number, edition etc.

Self Assessment

Fill in the blanks:

13. Library automation …………………… the speed, productivity, adequacy and efficiency of the library professional staff.

14. …………………… is required for each books.

15. In circulation control, make bound time for ……………………

16. Database creation and maintenance, interactive searching, saving of in house as well as external databases is the characteristics of …………………… retrieval.

Case Study

## Library Automation in College Libraries in Goa State, India

We live in an information age, and libraries are expected to use Information and Communication Technologies (ICT) to provide information more expeditiously and exhaustively than before. Computerization of library "housekeeping" operations is an important activity in this context. "Automation," when used in a library or similar environment, refers to the computerization or mechanization of activities (Kumar, 1987; Harinarayana, 1991).

Goa University is the sole university in the Goa state, and is located in Taleigao. There are three engineering colleges and one medical college in the state. The Goa Engineering College and Goa Medical College are run by the state, whereas the other two engineering colleges are run by private organisations. The private engineering colleges are Shree Rayeshwar Institute of Engineering and Information Technology, Shiroda, and Padre Conceicao College of Engineering, Verna. There are also colleges offering pharmacy, architecture, and dentistry, along with numerous private colleges offering law, arts, commerce, and science.

Library automation began in the late 1970s in a few special libraries and has now reached most of the university libraries. It has yet to take off in college libraries in India owing to various problems. Many studies on library automation have been undertaken in the West, but few have been undertaken in India. This paper tries to identify the status of library automation in college libraries of Goa State.

Twenty-eight (77.8%) of the college libraries are headed by a Librarian, while the remaining 8 (22.2%) are either headed by Assistant Librarians or by Non-professionals. This generally owes the post of Librarian remaining unfilled by college administration.

Figure 1: Total Collection of the Library
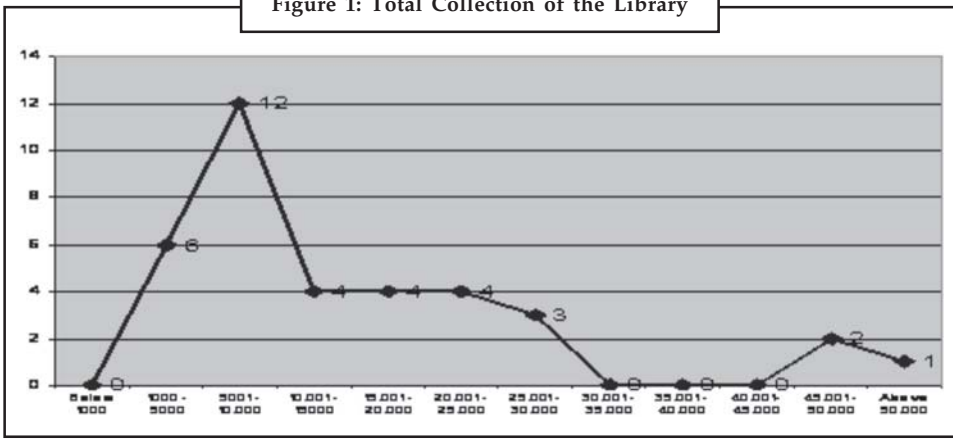
Twenty-three (63.9%) college librarians have a master's degree in library and information science; seven (19.4%) have a bachelor's of library and information science, and two (5.6%)

Contd...

have completed a certificate course in library science. Two (5.6%) have an M.Phil. degree in another field, while one (2.8%) has a doctorate in library science, and one has no professional qualification in library science. Out of these 36 librarians only 6 (16.6%) have cleared their NET/SLET (National Eligibility Test/State Level Eligibility Test).

Twenty-two college libraries have a total collection below 15, 000, while 14 have developed a total collection above 16,000, 3 have a total collection above 45,000.
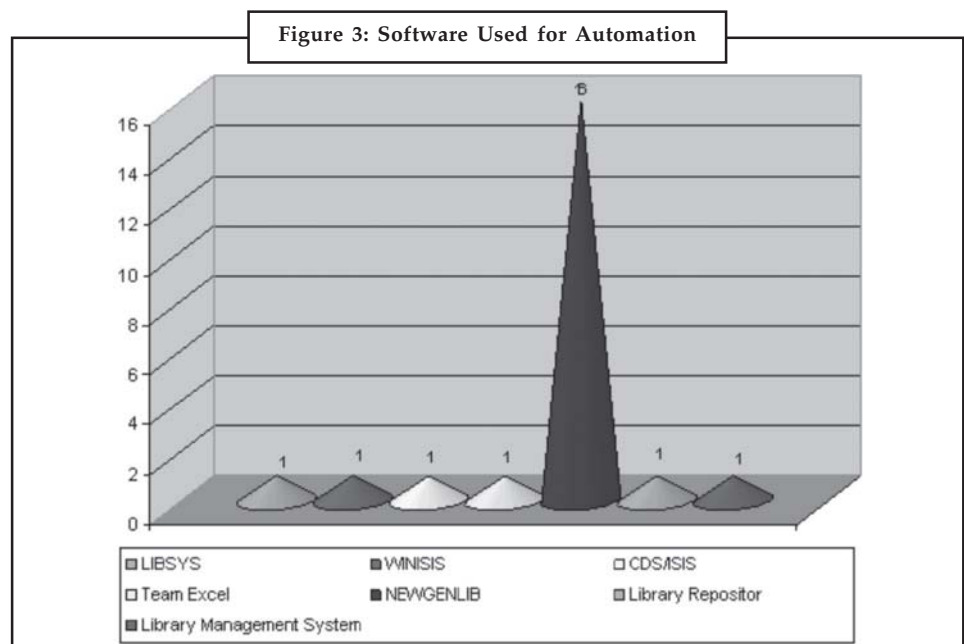
Library Automation

The data shows that 23 college libraries are automated. The 13 other libraries carry out their library operations manually and provide services to their users in a traditional way.

Status of Automation

Figure 2: Status of Automation
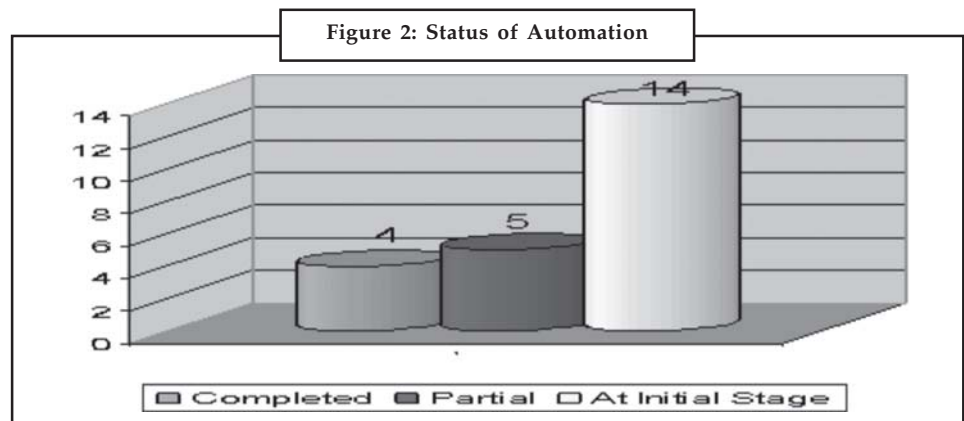
The bar chart shows the status of library automation in the 23 college libraries that have undertaken automation. Of these, 14 are at the initial stage, 5 are partially automated, while only 4 are fully automated.

Software Used for Automation

Figure 3: Software Used for Automation

Contd...

The majority of college libraries in Goa state use NEWGENLIB, perhaps because Goa University Library uses it. NEWGENLIB supports all automation functions, and its cost is comparatively low. The Central Library of Goa University has installed the Networking/ Consortium version of NEWGENLIB on its server. The plan is to build an Academic Library Network of the University and College libraries in Goa state.

Retrospective Conversion

Only 8 college libraries have completed retrospective conversion in the range of 95% to 100% of their total collection; followed by 4 college libraries completing this work in the range of 80% to 90%, while the remaining 11 libraries have completed their retrospective conversion in the range of 10% to 40%.

Areas for Automation

The focus of the college libraries is on completion of retrospective conversion on computerized circulation. Nine college libraries have completed automation in cataloguing and circulation. Among the housekeeping operations, acquisitions are the least automated, perhaps because the acquisitions module of the software is complicated.

Table 1: Areas of Automation					
Areas	**Neither Selected Nor Initiated**	**Selected**	**Initiated**	**Completed**	**Total**
Acquisition	23	NIL	NIL	NIL	23
Cataloguing	NIL	6	8	9	23
Circulation	8	1	5	9	23
Serial Control	16	2	5	NIL	23
Budget	23	NIL	NIL	NIL	23
Administration	NIL	7	15	1	23
SDI	23	NIL	NIL	NIL	23
CAS	12	3	8	NIL	23
OPAC	2	4	15	2	23

Outsourcing

None of the libraries surveyed are outsourcing their automation work to other agencies. They are trying to complete the work of automation with in the available resources in the library. Budgets can be one of the reasons that libraries are not outsourcing jobs such as data entry, generation of barcode labels, maintenance of hardware, etc.

Staffing

Sufficient staffing is essential. The required number of staff depends on the number of documents in the library and the number of library users. The following table shows the opinions of the librarians in the libraries that have automated on the sufficiency of staff.

Table 2: Sufficiency of Staff	
Sufficient Staff	**Insufficient Staff**
4	19

Only four libraries out of 23 which have undertaken automation have sufficient staff.

Contd...

Specialized Staff and Training

The following table shows the number of libraries which have recruited specialized ICT staff.

Table 3: ICT Specialized Staff	
Specialized Staff	**No Specialized Staff**
1	22

Of the 23 libraries with automation, only one has specialized staff in ICT. These remaining 22 must depend on experts within or outside their college. A majority of the libraries surveyed do not send their staff to ICT training courses.

Intranet Services

Only 8 libraries have a LAN in the library to provide automated services in the library, and the services provided by these libraries are tabulated in the following table.

Table 4: Services Provided					
OPAC	**CD-ROM Search**	**Internet**	**Online Database Search**	**CAS**	**SDI**
07	04	08	07	01	02

Barriers Faced by the Library

Barriers to automation are tabulated in the following table.

Table 5: Barriers	
Barrier	**No. of Libraries**
Insufficient funds	11
Inadequate staff training	22
Lack of staff coordination	06
Lack of user IT knowledge	10
Problems from higher authorities	02
Lack of space	12

Traditional barriers like insufficient funds, lack of space, and lack of training are the problems faced by many libraries.

A majority of the college libraries do not possess qualified librarians as per the guidelines given by the UGC and the state government. Only 25% of the librarians are qualified for the librarian's position. Twenty-three college libraries have undertaken automation of the library. A majority of the libraries initiated their automation process in the year 2005 and 2006. Retrospective conversion of documents is a crucial activity in the process of automation. Very few college libraries have completed their retrospective activity. Libraries have focused on cataloguing and circulation. No libraries in the survey have done outsourcing of the work of automation. A majority of the libraries lack the staff required for automation. Goa state college libraries generally use the same library software used in Goa University, i.e., NEWGENLIB. Traditional barriers such as insufficient funds, lack of trained staff, and lack of space are faced by a majority of the libraries.

The status of automation in the colleges of Goa is similar to that of college libraries throughout India. Libraries, librarians, and college administrations must initiate automation in order to provide effective and efficient services to users. Library professionals must upgrade their skills in order to meet the growing expectations of users from libraries.

Questions

1. Write down the case facts.

2. What do you infer from it?

Source: http://www.webpages.uidaho.edu/~mbolin/bansode-periera.htm

2.5 Summary

- The content of your documents is analysed by allocating controlled subject headings.

- Publisher series are managed in a dedicated index.

- Readers, suppliers and other contacts are all registered in the same address database.

- Library Collection can range from a few thousands to a few lakhs or to crores.

- The quantum of information to be acquired, processed, housed, circulated by libraries has increased.

- In the circulation section also files like user file and transaction files are created and maintained.

- Turnkey means that the library just turns the key and the system operates.

- Geographical location of an institution also played a very important role.

- Library automation is generic term used to denote the various activities related with the location, acquisition, storage, update, manipulation, processing, repackaging or reproducing, dissemination or transmission or communication, an improving the quality of products and services of library and information centres.

- There are some specific functions of an acquisition process.

2.6 Keywords

Barcode: A barcode is an optical machine-readable representation of data relating to the object to which it is attached.

Classification: The action or process of classifying something according to shared qualities or characteristics.

Clientele: The clients of a professional person or practice considered as a group.

Documentation: Manuals, instructions, tutorials, procedures, specifications, etc., that accompany a piece of equipment or software, and provide guidance for its proper use and maintenance.

Fundamental Right: Fundamental rights are a generally regarded set of legal protections in the context of a legal system, wherein such system is itself based upon this same set of basic, fundamental, or inalienable rights.

Information retrieval: Information retrieval is the activity of obtaining information resources relevant to an information need from a collection of information resources.

Monographs: A monograph is a specialist work of writing on a single subject or an aspect of a subject, usually by a single author.

Subject Heading: Subject heading is a word or phrase from a controlled vocabulary which is used to describe the subject of a document or a class of documents.

Turnkey: A turnkey is a type of project that is constructed so that it could be sold to any buyer as a completed product.

Vendor: A person or company whose principal product lines are office supplies and equipment.

2.7 Review Questions

1. Discuss various standard print layouts.

2. Explain some search samples which you will be able to conduct without difficulty.

3. What is Publisher series?

4. Describe address database.

5. Write brief note on Library Collection.

6. Explain Turnkey Systems.

7. What are the factors for Library Automation?

8. Discuss various activities which are associated with the Library automation.

Answers: Self Assessment

1.	True	2.	True
3.	False	4.	True
5.	Collection	6.	RAM
7.	Human Resources	8.	Turnkey
9.	True	10.	True
11.	False	12.	False
13.	Enhances	14.	Database
15.	Membership	16.	Information

2.8 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Online links   http://ir.inflibnet.ac.in/bitstream/handle/1944/188/03cali_19.pdf?sequence=2

http://www.bibliomaker.ch/en/software/presentation/main-functions

http://www.rajweb.name/Publications/art1.pdf

http://www.webpages.uidaho.edu/~mbolin/bansode-periera.htm

Unit 3: Basic Knowledge of Library Software

Objectives

After studying this unit, you will be able to:

- Discuss an overview of Library Automation Packages

- Explain the basic requirements for Library Automation Software Packages

- Describe the features of Library Automation Software available in India

Introduction

A computer system has two basic units – physical unit i.e. the hardware and logical unit i.e. the software. The whole array of software can be grouped into two fundamental categories – system software and application software. System software is responsible for the overall management of computer resources whereas application software is designed to perform certain tasks and thereby make computers able to perform different predefined jobs. Library automation software, as application software, performs day-to-day library activities through human interventions. Library automation packages are developed in view of the two most essential activities of any library – housekeeping and information retrieval. An automated library is one where a computer system is used to manage one or several of the library's key functions such as acquisitions, serials control, cataloguing, circulation and the public access catalogue. Automated library system centres on library automation package. Such automation packages are also called 'Library

Management Software (LMS)'. These are based on knowledge and experience of library professionals over the centuries.

3.1 Library Automation Packages: An Overview

Software may be viewed as digital version of human knowledge. LMSs are based on knowledge and experiences acquired by library professionals over centuries. These are used as intelligent tools for performing housekeeping operations, information retrieval and MIS (Management Information System) activities. Current LMSs are integrated systems based on relational database architecture. In such systems files are interlinked so that deletion, addition and other changes in one file can automatically activate appropriate changes in related files. The market place for LMSs is now a matured one in India. Almost all special libraries and large academic libraries in India have either adopted a computer-based system or planning actively to go for library automation.

3.1.1 Development of Library Automation Software

Software upgradation is a continuous process. LMSs are no exceptions. A critical study of development of LMSs over the years suggests that LMSs may be divided into four generations on the basis of sophistication of their facilities for integration and interconnectivity. The LMSs developed in all parts of the world from mid 1970s till date may be fitted into one of the four compartments described below:

- The first generation's LMSs were module-based systems with no or very little integration between modules. Circulation, cataloguing modules were the priority issue for these systems and were developed to run on specific hardware platform and proprietary operating systems;

- The second generation LMSs became portable between various platforms with the introduction of UNIX and DOS based systems. The LMSs of this generation offered links between systems for specific function and were command driven or menu driven systems;

- The third generation LMSs was fully integrated systems based on relational database structures and client–server architecture. They embodied a range of standards, which were a significant step towards open system interconnection. Colour and GUI features, such as windows, icons, menus and direct manipulation became standards and norms in this generation; and

- The fourth generations LMSs were based on web-centric architecture and facilitated access to other servers over the Internet. These systems are UNICODE complaint and allow accessing multiple sources from one multimedia graphical user interface.

Thus we see that the progress of LMSs through the generations was towards an effective and straightforward user interface, which supports access to multiple sources and services from one multimedia interface. Moreover, the latest LMSs allow customised report generation, data manipulation, and investigation of various scenarios. Therefore, they have all the potentials to be a decision support tool. A comparative table of features and functionalities of LMSs in four different generations can be drawn on the basis of the above discussion.

3.1.2 General Functions

LMSs support selection, ordering, acquisition, processing, circulation, serials control, dissemination of information services and also extend help in library administration, planning and decision making process as a management tool.

Notes

The individual tasks under each prime functions are:

1. *Ordering and Acquisition*

    ❖ Ordering

    ❖ Receiving

    ❖ Claiming

    ❖ Fund accounting

    ❖ Enquiries (order status, receiving status)

    ❖ Accessioning

    ❖ Bill processing

    ❖ Payment

    ❖ Reports and Statistics

2. *Circulation Control*

    ❖ Setting of user privileges

    ❖ Issue, return and renewal

    ❖ Reservation

    ❖ Fine calculation

    ❖ User management

    ❖ Reminders and recalls

    ❖ Enquiries (about item, borrower, reservation)

    ❖ Reminders and notices

    ❖ Reports and statistics and patron self-services

3. *Cataloguing*

    ❖ Standard format support

    ❖ Authority control

    ❖ Shared cataloguing

    ❖ Z39.50 based copy cataloguing

    ❖ Output generation

    ❖ User services

4. *Access Services*

    ❖ Online access

    ❖ Public access interface (OPAC)

    ❖ Web access and Remote access

    ❖ Gateway services

5. *Serials Control*

    ❖ Order placement and renewal of subscription

    ❖   Receiving and claiming

    ❖   Binding control

    ❖   Fund accounting

    ❖   Cataloguing of serials

    ❖   Enquiries (arrival of serials issues)

    ❖   Reports and statistics

6.   ***MIS (Management Information System)***

    ❖   Reports and statistics

    ❖   Analysis of statistics

3.1.3 Implementation and Commissioning

The commissioning of library automation package requires a sound implementation plan, including but not limited to the following items:

- Identification of all required tasks

- A timeline of all required tasks

- An indication of which person/group is responsible for completion of each task

- Expected start and completion dates of each task

- A site preparation requirements checklist

- A software installation requirements checklist

- A training requirement checklist

- Training courses and course outlines

- Description of post-implementation services

- Performance testing checklist

- Software upgradation schedule

- Hardware maintenance schedule

Self Assessment

State whether the following statements are true or false:

1.   Hardware may be viewed as digital version of human knowledge.

2.   Software upgradation is a continuous process.

3.   The fourth generation LMSs was fully integrated systems based on relational database structures and client–server architecture.

4.   The commissioning of library automation package requires a sound implementation plan.

5.   Colour and GUI features became standards and norms in third generation.

3.2 Basic Requirements for Library Automation Software Packages

A library automation package or LMS should fulfil the expectations of library users, staff and authority in terms of delivery, installation, implementation, maintenance, data conversion, services, utilities, training and other essential requirements for an integrated library management system. Libraries would like to develop or purchase a LMS that provides the most forward-looking, flexible, extensible and cost efficient solution. The basic requirements for any modern library automation package to satisfy such expectations may be studied under two broad categories – general system requirements and functional requirements.

3.2.1 General System Requirements

These are applicable to all modules of any modern LMS and should include but not limited to the following features:

1. The LMS must be fully integrated, using a single, common catalogue database for all operations and a common operator interface across all modules.

2. The LMS should have capability of supporting multiple branches or independent libraries, with one central computer configuration sharing a common database.

3. The LMS must allow unlimited number of records, users and organization specific parameters (e.g. loan period rules, fine calculation criteria, hold parameters etc.).

4. The package should include following fully developed and operational facilities at multiple customer sites:

   ❖ Bibliographic and inventory control

   ❖ Authority control

   ❖ Public access catalogue

   ❖ Web catalogue interface

   ❖ Information gateway (telnet, www, z39.50, proxy server, external access, customised web portal)

   ❖ Acquisition management

   ❖ Serials control

   ❖ Electronic data interchange (EDI)

   ❖ Reservation and materials booking

   ❖ Circulation control

   ❖ Customised generation of reports and usage statistics

   ❖ One step administrative parameters setting

   ❖ Z39.50 server (minimum version 3 and path profile level complaint)

   ❖ Z39.50 OPAC and staff client

   ❖ Z39.50 copy cataloguing client

   ❖ Marc 21 bibliographic and authority record import/export utility

   ❖ Outreach services

   ❖ Digital media archive system

   ❖   Fund accounting

   ❖   Inter library loan

   ❖   Bills and fines

   ❖   Multimedia files

   ❖   Interoperability and crosswalk

5.   LMS must provide continuous backup in suitable media (as per the choice of libraries) so that all transactions can be recovered to the point of failure.

6.   LMS must be compliant with the following standards:

   ❖   Z39.50 information interchange format

   ❖   MARC 21, UNCODE (UTF-8 OR UTF-16)

   ❖   Z39.71 holdings statements

   ❖   Z39.50 information retrieval service (client and server version 3)

   ❖   EDIFACT (EDI standard)

   ❖   IEEE 802.2 and 802.3 Ethernet

   ❖   HTTP, TCP/IP, Telnet, FTP, SMTP

7.   The LMS should be based on web-centric architecture and extend support for a range of multi-user and multitasking operating systems and RDBMSs.

8.   The LMS must be compliant with UNICODE standard for multilingual support and RFID for inventory management and self-issue/return facility.

9.   Vendor/Developing group should provide training to enable library staff to familiarise with system functions and operation should provide full and current system documentation in hard copy and in machine-readable form suitable for online distribution, and the LMS should include extensive online help for users and staff.

10.   LMS must support multiple hardware architecture in terms of server, network infrastructure, PC-workstations and peripheral devices.

11.   LMS must be supported with regular maintenance and on-call service, periodical software upgrades, continuous R&D, trouble-shooting of third party software such as database package and the library automation package, distribution of problem fixes/patches and emergency services for system failures and disaster recoveries.

12.   The package must provide security to prevent accidental or unauthorised modification of records through the establishment of access privileges unique to each user on the system and restriction of specific functions to specific users.

13.   LMS should provide graphical user interface, including but not limited to extensive online help, user self-service and personalisation features. The system should be supported with PC-based alternative that will allow circulation to continue in the event of system failure, communication failure and downtime required for maintenance.

3.2.2 Functional Requirements

These are the minimum essential features to be supported by each functional units or modules of any modern LMS:

Notes

1. *Authority Control:* The LMS must be capable of incorporating the following features:

   ❖ Support for MARC authority format for personal, corporate and topical name headings in a name authority file; title, uniform title and series entries in a title authority file, and subject headings in a subject authority file;

   ❖ Provision for generation of SEE, SEE ALSO references and Narrow Term-Broad Term-Related Term relationships network from authority records and link these references to matching access points in OPAC;

   ❖ Must allow any bibliographic field to be authority controlled, and include facilities to search, retrieve, and display print and global editing of authority records by authorised operators; and

   ❖ Must include provision for multiple thesauri with the ability to produce a list of all citations with authority file violations.

2. *Bibliographic Control:* The master bibliographic record of the LMS should extend support for:

   ❖ MARC 21 (Machine-Readable Cataloguing) bibliographic and authority record formats;

   ❖ MARC record loader that can accept records input from various sources and from various media like tape, diskette or over network;

   ❖ Global editing utility that can find and replace data within specified fields;

   ❖ Data format validation during input of bibliographic information;

   ❖ MARC 21 format for holding and display of holding on the basis of ANSI Z39.44 serials holdings display format;

   ❖ Import and export of bibliographic data through Z39.50 compliant catalogue;

   ❖ Interoperability and crosswalk through incorporation of XML, RDF and metadata schemas (e.g. Dublin Core Metadata).

3. *Online Public Access Catalogue (OPAC):* Following are the features of OPAC:

   ❖ OPAC must be fully integrated with other modules and accessible through web-based client;

   ❖ OPAC should provide browse indexes for author, title, and series and browse index combining all four indexes;

   ❖ It should allow combined, specific and field level searching for all formats along with phrase searching, nested searching and truncated searching;

   ❖ It must enable searching by using Boolean operators (OR, XOR, NOT, AND), positional operators (SAME, WITH, NEAR, ADJ) and relational operators ('greater than', 'less than', 'equal to', etc.) within and across all fields;

   ❖ It should provide facility to see processing status (fully catalogued, in process, lost, withdrawn etc.) and circulation status (in transit, reserve, recalled, on-hold etc.);

   ❖ OPAC should support full, brief, standard and customised display of records including relevancy ranking of search results;

   ❖ OPAC should also support bulletin board, information desk and gateway services (to access external databases) along with patron self-service options (e.g. holds, renewals etc.);

❖ OPAC must track users' preferences and interests, organised into a list of favourites. These favourites shall be included in a user's personal online account.

4. *Outreach Services:* An outreach services module should be available to automate the process required to:

❖ deliver materials to patrons who cannot physically enter the library;

❖ create patron interest profiles and reading histories;

❖ initiate easy selection, delivery and return of items; and

❖ deliver local history collection and community information services.

5. *Digital Media Archive (DMA) System:* The aim of DMA subsystem is to support search, retrieval and viewing of multiple media formats from client machines by using a web browser. It should be able to:

❖ browse and search (full text and metadata based) contents of text and images in ASCII, HTML, SGML, PDF, TIFF, JPEG, GIF, BMP, PCX, DCX etc. formats, audio and video clips and streaming audio and video;

❖ link itself with library OPAC through electronic access field (MARC/UNIMARC 856 field);

❖ receive and register published documents from an electronic document management system;

❖ help a user to import one or more files from the user's system and associate them with a metadata schema within the archive;

❖ support metadata harvesting by using Open Archive Initiative (OAI)/Protocol for Metadata Harvesting (PMH);

❖ extend support for various Document Object Identifier (DOI) schemes; and

❖ accommodate remote document submission system.

6. *System Administration:* The administrator or super user should control the overall administration of LMS through a highly secured module for managing the following activities.

❖ Access control for individual user, for each module and for each function;

❖ System security to prevent unauthorised access to databases;

❖ Module should support a standard implementation plan; and

❖ Module should keep a log of each transaction, which alters the database.

Self Assessment

Fill in the blanks:

6. Libraries would like to …………………… a LMS that provides the most forward-looking, flexible, extensible and cost efficient solution.

7. The …………………… must allow unlimited number of records, users and organization specific parameters.

8. LMS must provide continuous …………………… in suitable media so that all transactions can be recovered to the point of failure.

9. The LMS must be compliant with …………………… standard for multilingual support.

10. …………………… should provide browse indexes for author, title, and series and browse index combining all four indexes.

3.3 Features of Library Automation Software Available in India

The automation of library activities in India started in full swing with the introduction of CDS/ISIS. CDS/ISIS is a menu-driven generalised information storage and retrieval system designed by a team of experts under UNESCO/PGI programme. It is specifically meant for the structured non-numerical Introduction databases. In India, erstwhile NISSAT (ceased existence since 2004) with the help of other professional bodies organised a number of training courses on application of CDS/ISIS (DOS and Windows version) in information organisation activities. As a result, a large pool of trained manpower developed all over the country. Some organisations from the experience of use of CDS/ISIS, MINISIS etc. developed their own LMSs e.g. DESIDOC developed DLMS (Defence Library Management System), INSDOC (now NISCAIR) came with CATMAN (Catalogue Management) and SANJAY was developed by DESIDOC under NISSAT project by augmenting CDS/ISIS (Version 2.3) for library management activities.

The LMSs presently available in India may be ranked in 2nd, 3rd and in between 3rd and 4th generations on the basis of their features. As far as the origin and application domain is concerned, the LMSs available in India may be grouped into three fundamental groups – LMSs of foreign origin, LMSs developed over LMSs or textual database management systems of foreign origin and LMSs of Indian origin. This grouping may again be sharpened by dividing the packages on the basis of size of library systems i.e. large library system, medium range library system and small range library system.

3.3.1 Library Automation Packages of Foreign Origin

This group includes library automation packages developed by foreign or multinational vendors and distributed in India either through approved agents or value-added resellers. The group covers four most popular packages of foreign origin, which are discussed below:

1. *ALICE for Windows:* This LMS developed by Softlink International, Australia, is a global software package and is marketed worldwide through a number of agencies based in America, Australia, Britain, Iceland, India, Malaysia, New Zealand and Singapore. This software is marketed under the name of Embla in Iceland, Alice elsewhere in Europe, OASIS in South East Asia and Australia, Annie in America and other parts of the world. Recently Softlink International decided to call the software Alice for Windows all over the world to maintain consistency in nomenclature. The main features of Alice are as follows:

    ❖ It has four distinct versions – Public library version, Special library version, Academic library version and School library version.

    ❖ The package is modular and modules are grouped into one of the three sets as mentioned below:

    ♦ **Standard Set:** Includes Management; Reports and Utilities; Circulation; OPAC.

    ♦ **Advanced Set:** In addition to standard set it includes Acquisition; Periodicals; Journal Indexing; Multimedia; Web Inquiry.

    ♦ **Special Set:** In addition to Standard and Advanced set, it includes Reservation; Interlibrary loan; Patron self-checking; Rapid retrospective conversion; Multilingual features; Self circulation; Union catalogue.

❖ The LMS is backed by a number of support services which include onsite training programmes, continued R&D, feedback system through user groups, free newsletters etc.

❖ Besides traditional library materials, it can be used to manage slides, audio and videocassettes, paper clippings, maps, charts, electronic documents and websites. Location of documents in library can also be seen with the help of the library map. It is possible to maintain consistency in recording items through the use of authority files.

Did u know? Alice has a capacity of holding 99 lakhs records.

❖ It supports a total of eleven search criteria to search the database from any machine (UNIX/MAC/Apple etc.) through Internet or Intranet. It helps to generate customised reports in addition to 800 preformatted reports available with standard set.

❖ It supports barcode technology and has inbuilt communication function. As special features, the LMS provides data protection function, rapid retro conversion facility and online tutorial and help system.

2. *BASISplus and TECHLIBplus:* BASISplus and TECHLIBplus are products of Information Dimensions Inc. (IDI), USA. National Informatics Centre (NIC), New Delhi is the value-added reseller of these packages in India. BASISplus is a client–server relational database system for text and mixed object documents that adhere to fundamental principles of open systems including interoperability, portability and scalability. The database engine provides user authentication, document access control, concurrency control, deadlock protection and recovery. The features of the Introduction LMS are as follows:

❖ Relational DBMS

❖ Client–server architecture

❖ Active data dictionary

❖ Enhanced security feature

❖ Complete backup and restore capabilities

❖ Power search facility

❖ Full text retrieval

❖ Mixed object management

❖ Thesaurus and controlled vocabulary

❖ Screen customisation

❖ Document converters

❖ Immediate and Deferred updating (online and batch)

❖ Content based retrieval

❖ Component-level retrieval and image management

❖ Networking (LAN and WAN)

❖ Seamless Internet support

❖ Open Application Programming Interface (API) to support client access to server databases

❖ GUI based easy user interface for retrieval, display and data entry

❖ Intelligent search assistance and thesaurus manager

❖ Converter technology which allows user to import and export over 30 different word processor file formats

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Notes TECHLIBplus is a comprehensive library automation package developed over BASISplus and customised to perform all the operation and activities of a fully electronic library. TECHLIBplus supports OPAC, Catalogue maintenance, Circulation, Serials management, Acquisition, Processing and MARC cataloguing. The LMS provides direct access to information in Current Contents.

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3. *KOHA:* KOHA is an integrated library management system that was originally developed by Katipo Communications Limited of Wellington, New Zealand for the Horowhenua Library Trust (HLT), a regional library system located in Levin near Wellington. In 1999, Katipo proposed developing a new system for HLT using open source tools (Perl, MySQL, and Apache) that would run under Linux and use Telnet to communicate with the branches. The software went in production on the January 3, 2000, and released under the GPL for public use in July 2000. There has been a high level of interest in KOHA internationally, and it is currently being used in New Zealand, Australia, Canada, United States, India, Thailand, United Kingdom, and France. Many of the libraries presently using KOHA are small and medium sized mainly school and special libraries. KOHA has just been implemented at the Nelsonville Public Library in Ohio.

The KOHA project has attracted developers in a number of different countries, with release 1.2.2 being coordinated from Canada and the current stable release, 2.0.0 (available both for Linux and Windows), from France.

The major features of KOHA are:

❖ *General:* free to download, no license fee, fast, web centric, fully customisable, environmentally friendly (one can recycle those old PCs), establishing an international community of users and developers giving libraries the freedom to do it themselves or work directly with the system builders, generating an international spirit of co-operation and collaboration, easy staff training, supports both Windows and Linux platforms, uses freeware companions.

Example: Apache as web server, MySQL as backend RDBMS and PERL as scripting language, supports web OPAC and web interface for staff, branches access main server via ordinary phone lines and modems, can run on PC grade or server grade hardware.

❖ *Circulation:* issues (including rentals), renewals, returns and fines. Uses barcode scanners or keyboard; can generate a list of over dues for a phone reminder system.

❖ *Acquisitions:* multiple book budgets and suppliers, real time budget information.

❖ Catalogue updates fast and slick, support for MARC 21 and UNIMARC.

❖ Searching by keyword, author, title, subject, class number or combinations, customise to suit need of individual library.

❖ Memberships – one-stop-shop with all member information on one page.

❖ User driven reservation facility from OPAC interface (Do-it-yourself reserves, in the Library or via the Internet).

- OPAC in the library or via the Internet and Stock rotation through branch libraries.

- Work in progress: Z39.50 searching, Virtual Bookshelves, French and German versions, NCIP self-checking, Port to other operating systems so that it will run natively, New themes, Additional book information (e.g. covers), Web based reports, Mozilla chromed OPAC integrated with Greenstone digital library system, Integration with Internet "gateway" system and bill to patron card, Printing spine labels.

- In most cases, Koha users either undertake the development themselves or contribute the changes back to the project, or they commission a developer to undertake specific enhancements.

- The Koha project uses a number of channels to allow members of its community to communicate with each other – there is a general mailing list, as well as separate ones for developers, Windows users, French-speaking Koha users/developers, and German-speaking Koha users/developers.

Caution The developers use Internet Relay Chat (IRC) for real-time scheduled meetings and conversations.

4. *Virtua ILS:* Virtua ILS (Integrated Library System) is a sophisticated, internationalised library automation solution that addresses the full spectrum of library activities. This LMS is designed and developed by VTLS Inc., Virginia, US. It uses off the- Shelf UNIX hardware and the Oracle RDBMS to guarantee continued availability and support. The important features of this world-class software are enumerated here in the form of a list.

    - It is fully a parameterised software i.e. libraries can configure the setting to achieve maximum flexibility;

    - Supports national and international standards for data interchange;

    - Basic system includes modules for OPAC, circulation, reserves, cataloguing, acquisition, serials control and reporting;

    - Basic system may be supplemented by companion products like RFID, MARC data processing suite, ILL manager and patron self-check system;

    - Provides support for excellent security options at different levels of access;

    - Supports UNICODE and thereby enables the input and display of different languages in their native scripts. In fact Virtua ILS ensures true multilingual catalogue database;

    - Helps designing web-enabled digital media archiving and supports development of digital library database (delivery options include CDROM, DLT, DVD and DAT);

    - Provides 'security bit' enabled RFID solution to serve both inventory and theft deterrence functions;

    - Provides comprehensive customisation parameters (over 1000) for global settings and each subsystem (OPAC, cataloguing, circulation, acquisition, serials control etc.);

    - Provides extensive and precise control over user activities and helps creation of rich and customised web interface for various collection components for each patron class;

❖ Ensures management of multiple libraries or branches across a library;

❖ Supports multilingual authority control, and networked multimedia database management and seamless access to multiple databases through Z39.50 client;

❖ Incorporates FRBR model in the design of bibliographic databases.

3.3.2 Library Automation Packages Developed over Foreign Software

This group includes the automation packages built on the top of either foreign automation packages or general text retrieval packages. The discussion covers three automation packages of which two are based on CDS/ISIS.

1. *LAMP:* Library Automation and Management Package (LAMP) is a freeware and available for downloading from Internet. The package, developed jointly by Netherlands Library Association, Pakistan Library Association and UNESCO, is based on CDS/ISIS (version 3.07). This MS-DOS based package is well suited for small libraries like school and college libraries. The package contains five main modules with number of sub-modules and facilities under each sub-module. The features of LAMP are as follows:

    ❖ Supports creation of authority files for books and serials (supplier authority, name authority, subject authority etc.);

    ❖ Supports use of LCSH subject heading in subject authority file;

    ❖ Acquisition module supports all the major tasks related to books and serial acquisition by – creation of budget, purchase order authority file and purchase order data entry, generation of purchase order, receiving of books and serials, display of order status, reminders to suppliers, payment and reordering;

    ❖ Cataloguing supports data entry for monographs and serials, catalogue card generation, creation of bibliographies, binding and write off functions;

    ❖ Circulation involves the facilities like creation of member database, edit/updating of member database, issue and return of books and serials, renewal and reservation, checking of availability of documents, and outstanding documents, generation of statistics on issued items and library members.

    Supports lots of other utilities viz. generation of gate pass, shelf-card, accession registers, production of various statistical reports, global editing and replacement etc.

2. *NG-TLMS.net:* NG-TLMS.net is a state-of-art library automation Software based on TLMS (Total Library Management Service). TLMS is developed in Germany by TRANCE group. The route of development for this LMS is TLMS – > NGTLMS – > NG-TLMS.net. NG-TLMS.net is designed by WebOPAC Applications Pvt. Ltd., Kolkata. It is SQL based client-server system, based on Microsoft's .NET platform. It supports CCF, USMARC, Indian UNIMARC (as recommended by Central Secretariat Library, New Delhi) and Z39.50. NG-TLMS.net includes following supports:

    ❖ Printing of accession register; AACR II catalogue card generation; article scan management; authority files creation; auto cataloguing from web sites; auto export and import; auto keyword generation; automatic barcode generation; letterhead creation; dropdown matching etc.

    ❖ Barcode based issue and return and serials control; auto status generation for progress of processing of documents; bulletin board facility; Kardex generation for serials control; complete intranet support; automatic claim generation for overdue and missing issues journal;

❖ RTF, dial-up networking, e-mail and printing of gate pass; ID card generation; arrival list generation; multi-lingual support, web access of OPAC; power search facility; fine calculation and receipt generation; reservation of books; retrospective data conversion; SDI service; search refining; security enhancement; statistics and graphs; stock verification;

❖ UNIMARC input sheet generation; UNIMARC cataloguing; virtual library creation; Z39.50 client and server; UNICODE support (all languages of the world are supported);

❖ Web centric architecture i.e. it requires only installation on server. Client uses browser to access all information;

❖ No restrictions on the number of records; acquisition module includes accounting software and is optional; basic software covers all areas e.g. OPAC, cataloguing and circulation; all Indian regional languages supported;

❖ WebOPAC, Internet and Intranet via browser, union cataloguing supported in distributed and replication environments, supports US MARC 21, UNIMARC, CCF and Z39.50, and can be installed by relatively less experienced computer users.

3. *WINSANJAY:* This LMS has been originated from SANJAY, a package based on CDS/ISIS (Version 2.3). It was developed by DESIDOC under a NISSAT project to meet the requirements of library management activities. It includes a set of 35 Pascal programs and 25 special menus. The features of WINSANJAY are as follows:

❖ Windows based and more user friendly than WINISIS and CDS/ISIS for library housekeeping operations. Suitable for medium range libraries;

❖ Effective interlinking of databases (it is a great achievement because WINISIS or CDS/ISIS does not support relational database design model). Interlinks book databases, member databases, vendor databases and budget databases;

❖ Maintenance module restricts the access right to a limited set of users and thereby provides security measures. User module helps library staff to carryout daily routine in circulation, acquisition and online catalogue.

3.3.3 Library Automation Packages of Indian Origin

This group includes packages designed and developed by Indian vendors and software agents. The features of the following automation packages are discussed here. Packages are selected for discussion on the basis of their customer base and popularity.

1. *AUTOLIB:* Autolib is fully integrated multi-user software on Windows Environment, designed to automate various activities of University Libraries, College Libraries, R&D Libraries, Public Libraries and Special Libraries. The software is developed by Auto Lib Software Systems, Chennai and the product range includes:

❖ MS-Access with Visual Basic Version

❖ MS-Access with Visual Basic & WEB Edition

❖ MS-SQL server with Visual Basic Version

❖ MS-SQL server with Visual Basic & WEB Edition

❖ MS-SQL server with Visual Basic

The LMS is module based system, designed and developed by a team of library and information specialists, system analysts, software professionals, network specialists and

database designers. The features of Autolib may be listed as: General features: Module based, User Friendly, GUI Environment, Based on client server architecture, Uses Visual Basic 6.0 as front end and MS-SQL V.7.0 RDBMS as back end, Uses TSQL Query Language, Module level Security, Z39.50 Protocol Support, Export/Import of data in ISO 2709 format, Cataloguing of digital resources, Implementation of AACR, CCF, Dublin Core, TCP/IP and Dial-up Network support, Web based reports, Menu based operations, Incorporated Mandatory Fields of CCF, Powerful Search Facility/Query Builder, Printing various reports in several formats, Simple data entry, User ID and password protection, Online help/documentation, Continuous product up gradation, Customer support and maintenance.

Did u know? **Minimum hardware and software requirements:** Server configuration – Pentium II/III 64 MB RAM/4.2 GB HD, 32x CD-Drive/1.44 FDD, Network accessories, SVGA Monitor, Windows NT Server 4.0 and SQL Server 7.0. Client Configuration – Pentium II with 32 MB RAM/4.2 GB HD Windows NT workstation/Windows 9x.

The functional features of this LMS are as follows:

❖ Database Management – data entry/updating of database for user, author, publisher, supplier, member, book, journal issues and back volumes, article report, thesis, standard, non-book materials, budget, subject, department etc.;

❖ OPAC – powerful and versatile search facility, Simple search for beginners, Query builders for advanced users, query windows for complicated search, boolean search, field level search (single field/multiple fields, author/title/keyword/subject, accession no/classification, journal name/article name etc.);

❖ Circulation – transaction, issue, return, renewal of books, journals, back volumes, recall, reservation, cancellation, reminders, reports;

❖ Serials Control – subscription of new journals, renewal of journals, receipts of new issues, reminders for missing issues, invoice processing, payments, browsing issues, reports generation;

❖ Acquisition Control – duplicate checking, indent processing for new books, book ordering, reminders, receipts of books, invoice processing, payment, budget management;

❖ System Administration Module – user ID and encrypted password protection, module level security, budget management, stock verification, global updating, fixing due dates, overdue charges etc., holiday maintenance, reports, new additions, catalogue (main/author/title), accession register/bibliography, list of books by author/title/publisher/year, subject/call number (by any order), books by unique titles, frequently issued books, frequently accessed books, books issued/returned/reserved, receipt for fine amount/deposit/loss of book, etc., list of users/publishers/suppliers/departments, no-due certificates, stock verification report, budget details, orders, journal list, journal subscription/order report/missing issues;

❖ Article Indexing – allows to create journal article database, allows to create author index and keyword index, allows to search and retrieve journal articles, allows to create index and abstracts, allows to publish CAS bulletin, allows to generate contents pages;

❖ Digital Library Module – allows to catalogue multimedia digital resources such as text, images, audio file, video clippings, etc. Allows to catalogue based on Dublin Core standard, Allows to handle various file formats such as .bmp, .jpeg, pdf, .doc, .avi, etc.

2. ***E-GRANTHALAYA:*** This LMS is developed by National Informatics Centre (NIC), Bangalore centre to suit the requirements of small and medium sized libraries. It is an easy-to-use software package and supports all the routine library operations. The General and Special features of the LMS are as follows:

   ❖ The package includes functional modules for administration, serials control, acquisition, circulation, OPAC, reports and index;

   ❖ Generates customised reports and statistics of library usage;

   ❖ OPAC allows simple and advance search options, supports web-enabled searching;

   ❖ The package has bilingual capabilities and can be customised to suit all Indian languages supported by ISM 2000 developed by C-DAC, provides options to control access through login id and password and supports quit-in privileges for users and staff;

   ❖ Supports both standalone and networked operation mode. Recommended server configuration is Pentium III processor, 128 MB RAM and 4.3 GB Hard disc;

   ❖ Requires Windows NT/Windows 2000 for server and Windows 98/XP/2000 for client machines and uses MS SQL server as backend database;

   ❖ Requires ISM2000/Leap office 2000 as bilingual tool.

3. ***GRANTHALAYA:*** This CUI based (DOS & UNIX) modular LMS is developed on FoxPro by INSDOC (now NISCAIR) for medium range libraries. It includes all the modules required for day-to-day library operations. The package is made of seven modules – library administration; query; circulation; acquisition; serials control; technical processing and data administration. The salient features of the LMS are:

   ❖ Based on object oriented design;

   ❖ Supports CCF and ISO 2709 for import and export of data;

   ❖ Supports Boolean operators and range searching;

   ❖ Provides online help through screen messages;

   ❖ Generates a dictionary for various data elements for easy searching.

4. ***LIBSUITE:*** This GUI or CUI LMS, developed by SOFT-AID Computer Ltd., Pune, is based on web-centric architecture and designed to work with different media. LIBSUITE is based on three-tire web centric architecture in which server machine uses Windows NT/2000 and Internet Information Server (IIS) – as web server. The database server relies on Oracle 8i and clients use web interface for accessing server through Internet or Intranet. LIBSUITE extensively uses latest technologies like Active Server Pages (ASP) and Component Object Modeling (COM).

   ⚠
   Caution The web-centric architecture ensures that any machine with a web browser can be a client. It also ensures working independent of operating systems in client machines.

   The following are the significant features of LIBSUITE:

   ❖ It provides all the standard modules and supports customised report generation and standard protocols Z39.50;

   ❖ The package bundles follow fully featured modules – acquisition, cataloguing, circulation, queries, serials control, set up and maintenance;

❖ Cataloguing module, apart from supporting regular activities manages multi-format materials, generates entire status i.e. total number of books, number of books issued and number of books available on stack;

❖ Circulation module supports all the required operations including ILL and generation of photograph of the member in circulation panel;

❖ System administration module supports controls over the access, creation of authority entries and setting of parameters for cataloguing, circulation, etc.;

❖ Supports stock verification and global addition and deletion;

❖ Acquisition module supports all media and production of accession register;

❖ Web-centric architecture ensures use of any machine as client as it does not require the installation of client-side software;

❖ Provides easy user interface and ensures seamless navigation through Intranet, and login and password based access as security measure;

❖ Includes various utilities like calculator and calendar.

5. *LIBSYS:* LIBSYS is a fully integrated multi-user library management system based on client-server model and supports open system architecture, web-based access and GUI. This indigenous LMS is designed and developed by LibSys Corporation, New Delhi. LIBSYS has seven basic modules – Acquisition; Cataloguing; Circulation; Serials; OPAC; Web-OPAC and Article indexing. The leading features of the different LIBSYS products such as LIBSYS 4.0, LS-Premia, LS-Digital, LSmart and LSEase are as follows:

❖ Based on client-server model and TCP/IP for communication and networking;

❖ Provides ANSI Z39.50 complaint web access for making the server accessible through Internet/Intranet;

❖ Supports web OPAC for accessing bibliographic databases through Internet/Intranet;

❖ Supports standard bibliographic formats like MARC 21, UNIMARC, CCF etc.;

❖ Includes images and multimedia interfaces with LIBSYS search engine;

❖ Supports barcode technology for membership card production and circulation;

❖ Offers SDI, CAS, fine calculation, e-mail reminders etc.;

❖ Provides flexibility in choosing operating platforms (UNIX, Windows, NT, Novell NetWare) and backend RDBMS (SQL server, Oracle);

❖ Supports Web-OPAC through PERL/CGI access mechanism;

❖ Offers a range of products suitable for different types of organisation e.g. LSEase is an affordable solution for small and medium sized organisation;

❖ Provides RFID technology (in cooperation with TAGSYS – the largest smart card solution provider) for inventory management and smart card technology integration for identification of individuals;

❖ The LSPremia provides full UNICODE support and management of multisite libraries;

❖ Offers digital resource management system through LS-Digital suite. It supports resource structure definition, scanning, PDF conversion, multimedia database management and metadata based searching and retrieval;

❖ LIBSYS supports operating systems Unix, Windows NT and Novell NetWare in client-server environment using TCP/IP protocol. It does not require any RDBMS as

it uses proprietary database but user library may opt for SQL server or Oracle as backend RDBMS. The server hardware may be Pentium; Alpha, HP-9000 or Sun (SOLARIS) and client machine may be Windows 9x/NT, X-window or Web-client.

6. *SOUL:* The story of SOUL (Software for University Libraries) started with the development of ILMS (Integrated Library Management Software) by INFLIBNET in collaboration with DESIDOC. Two versions of ILMS (DOS and UNIX) were developed for university libraries in India. But with the introduction of GUI based system and other revolutionary changes in the field of computer software, INFLIBNET decided to develop a state-of-the art, user friendly, Window based system which will contain all the features/facilities available with other LMSs in the market. As a result INFLIBNET came out with a LMS called 'SOUL'. The package was first demonstrated in February 1999 during CALIBER-99 at Nagpur. SOUL uses RDBMS on Windows NT operating system as backend to store and retrieve data. The SOUL has six modules – Acquisition; Cataloguing; Circulation; Serial Control; OPAC; and Administration. The modules have further been divided into sub-modules to take care of various functions normally handled by the university libraries.

The features of SOUL are:

❖ Window based user friendly system with extensive help messages at affordable cost;

❖ Client-server architecture based system allowing scalability to users;

❖ Uses RDBMS to organise data;

❖ Multi-user software with no limitation for simultaneous access;

❖ User friendly OPAC with web access facility;

❖ Supports bibliographic standards like CCF and AACR II and ISO-2709 for export import facility;

❖ Provides facility to create, view, print records in regional languages;

❖ Supports LAN and WAN environment;

❖ Available in two versions – university library version and college library version.

7. *SLIM 21:* SLIM (System for Library Information Management) a software suite from Algorhythms Consultants Pvt. Ltd., Pune is a module-based LMS that offers wide range of functionality for library management. SLIM 21 is the latest product of the series that succeeded SLIM, SLIM++, SLIMEX and SLIMLX. SLIM 21 support multiple operating systems and backend databases. The relevant features of SLIM 21 are:

❖ SLIM21 is a module-based system. The basic modules are acquisition, cataloguing, circulation, serials control, OPAC and article indexing.

❖ Enterprise module of SLIM21 supports usage statistics, current awareness service (CAS Publish), web aware OPAC (WAOPAC), web proposals for new books, interlibrary loan (ILL) and selective dissemination of information (SDI).

❖ Supports export/import through MARC/CCF/ISO-2709 standards and downloading of bibliographic data from online databases through DB Bridge module and Z39.50.

❖ Generates customised reports on screen/printers/RTF or as text/PDF/ HTML files with auto e-mailing facility.

❖ Unicode based LMS that supports multi-script sequencing for Indian scripts.

❖ Generates shelving order for documents as per colon classification, supports smart card/RFID based circulation and touch chip (biometric) interface for user authenticity.

❖ Creates library map for easy location of items.

❖ Provides user-friendly online help and reference manual.

❖ Supports digital library environment and transformation of bibliographic data into XML, XHTML and DCMES.

❖ Supports both standalone and network architecture. Minimum requirement for server machine is P IV processor and 256 MB RAM with Windows XP/2000 as OS and SQL server as backend RDBMS. Client machine may be any P II machine with Windows 9x/2000/ME/XP or NT workstation.

Task Compare the features of any two library automation packages of Indian origin.

Self Assessment

State whether the following statements are true or false:

11. BASISplus is a client-server relational database system for text and mixed object documents that adhere to fundamental principles of open systems including interoperability, portability and scalability.

12. KOHA is a sophisticated, internationalised library automation solution that addresses the full spectrum of library activities.

13. Library Automation and Management Package (LAMP) is a freeware and available for downloading from Internet.

14. Autolib is fully integrated multi-user software on Windows Environment, designed to automate various activities of University Libraries, College Libraries, R&D Libraries, Public Libraries and Special Libraries.

15. Web-centric architecture ensures use of any machine as client as it require the installation of client-side software.

Case Study **Serving the Users in a Multilingual Library "A Case Study of Punjabi University, Patiala, Punjab, India"**

India is an exceptional multilingual country with diverse cultures; it has 28 states and 7 Union territories where 22 languages and 11 scripts are officially recognized. India is world's second largest populated country and it has 550 million people below the age of 25 years which has created a huge demand for higher education. The 2011 Census indicates that the literacy level in the country has gone up to 74.04% from 65.38 in 2001. Current Gross Enrolment Ratio (GER) in India is 12.4% which is nearly half of what it is for the developing countries. The approach for 12th Five Year Plan (2012–17) is planned for inclusive growth and 100% adult literacy, increase in GER by 20% by March 2017.

Punjab is one of the most prosperous states which lie in the north of India. The Punjabi language also known as Gurmukhi is the official language of Punjab. Key dialects of Punjabi are Majhi, Doabi, Malwai, and Powadhi. The standard Punjabi dialect is Majhi and standard written Punjabi is based on this dialect. In India only 2.73% of population speaks

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Punjabi language. Other languages spoken in Punjab are English, Hindi, Urdu and Bihari. Punjabi is the most spoken immigrant language in England and fourth most spoken language in Canada according to official census. Among the world languages, Punjabi is the 11th most spoken language in the world.

India is known for having been a pioneer in higher education. Taxila University, which is oldest in the world, has been in existence during 414 A.D. in the city of Gandhara in northwest India (now in Pakistan). At present there are 563 universities in India including central, state, deemed, and private universities. Punjab state has 12 universities and 380 colleges.

Punjabi University, Patiala

Punjabi University, Patiala is named after a state language, the second University in the world to have such a distinction. It was originally conceived and started in 1962 as a unitary multi-faculty teaching and research university and primarily meant for the development and enrichment of Punjabi language and culture. However, sensitive to the social and educational requirements of the state, it grew into an affiliating one in 1969. It has since developed in significant dimensions and acquired a unique character among the centres of education and research in the country. Punjabi University library was renamed after the famous Punjabi lexicographer and encyclopaedist Bhai Khan Singh of Nabha city which is close to Patiala. The library was established with two main objectives (a) to build a basic minimum collection of essential publications (including current periodical publications) relating primarily to subjects in which the University was starting postgraduate teaching and (b) to organize the publications with a view to facilitating and promoting their use among students and teachers. Bhai Khan Singh Nabha, Punjabi University Library is a centre of academic and research activities. It is housed in a large modern building and stocks around 4,96,815 volumes including 4,44,215 books and 52,600 bound periodicals. The latest books are added regularly every year. Besides those in English, the collection is in different languages as per the following:

Language	Collection
Hindi	25,360
Punjabi	24,240
Urdu	1,800
Sanskrit	2,100
Persian	180
Greek	225
Russian	360
Bengali	480
Assamese	20
Kashmiri	40
Marathi	100
Gujarati	50
Hebrew, Arabic, etc.	60
Dravidian (Tamil, Malayalam, Telugu, etc.)	200

Introduction of information communication technologies (ICTs) and its use in library operations has changed information needs and behaviour of the users especially for those

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who want the information in the multi-disciplinary and multi-lingual nature. The library is fulfilling the aims and objectives of Punjabi University, its parent institution, by purchasing two copies of any book published in Punjabi language. The acquisition section of the library is not directly involved in the selection of multilingual books as it mainly procures the books which are recommended by the respective departments. On purchase, the discount rate for Urdu, Persian and Sanskrit titles is 20%, for Punjabi titles 10–30% and for Hindi titles 10– 25%. There is a library professional in the library, who is well conversant in Urdu language and he records all the Urdu titles, accessions, classifies and catalogues them. He is going to retire soon and the library is not having any replacement but the Librarian informed the author during interview that a requisition has been sent for having a library professional proficient in Urdu language. English, Punjabi and Hindi languages are taught at school and college level hence it is easy to process documents in these languages. The accession registers in the library are maintained subject wise.

For classifying the documents the library is following Colon Classification 6th edition. Authority file is also maintained by the library whereby numbers which are not available in the Colon Classification are recorded for further usage. Cataloguing is done using the Anglo-American Cataloguing Rules, Ed.2 code. English, Hindi and Punjabi titles are recorded in the respective language but Urdu and Sanskrit titles are transliterated and recorded in English. While classifying the translated documents, the Call number comprises of the Class number to which it belongs and the Book number which further specifies the medium of the document.

Library is using LIBSYS software which has multilingual support. English, Punjabi and Hindi titles are entered in their respective languages whereas Urdu and Sanskrit are transliterated in English. Languages of these titles are specified in the notes area. Shelving of the books is done according to the class numbers assigned using Colon Classification. The spine indicates the language of the book for facilitating identification by the users and shelf guides are also written in languages pertaining to the collection.

In the Periodical section library is presently subscribing to periodicals in English, Punjabi and Hindi language. The library staff of this section is not facing any problem in providing service to users. Reference section of the library takes the help of faculty of Urdu department for any assistance required by the users in accessing literature in this language. Manuscripts were also processed by the assistance and guidance of faculty of Urdu department. There is no provision of translation service as a result of which documents in Greek, Russian, Japanese and Chinese language are not being used. The Publication Bureau of Punjabi University is getting important books translated in Punjabi language. Library staff is trained to assist the users in accessing web-based resources in different languages. The Librarian justified the use of multilingual collection as users and researchers from adjoining states visited the library for using the rich collection. The library staff was not aware of any standards and guidelines of developing multilingual collection, as they felt every state in India was trying to promote its own language.

Bhai Ganda Singh Library

Bhai Ganda Singh was a famous historian and the former Punjabi Reference Library is named after him. It forms an integral part of the library housed in an interlinked building with the main building for the convenience of the staff and the users. Punjabi Reference Library was established in 1981 with the objective of promoting Punjabi language and to cater to the needs of the researchers and scholars of Punjabi language and culture. The library has taken a historic step for the growth and development of Punjabi language and act as a bibliographic centre for Punjabi publications. Total Collection of the library is 54,850.

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Language	Collection (%)
Punjabi	52,632 (95.95%)
English	1,278 (2.32%)
Hindi	500 (0.91%)
Urdu	400 (0.72%)
Persian	40 (0.07%)

In recent years the budget for this library has doubled; out of that, 85% is spent on the purchase of books and 15% on journals, magazines, and newspapers. The collection is purchased on the criteria passed by the university authorities which encourage purchase of two copies of books on Punjab history, religion, culture etc. in Punjabi language and only one copy in Hindi, English, and Urdu language. In addition to the purchased collection, there is a Special Collection Section that houses rare collections gifted by 54 different famous historians, writers, singers, artists, theatre personalities etc. in different languages. The books are classified according to Dewey Decimal Classification 21st edition and cataloguing is done according to AACR II. Majority of the users of this library are researchers and scholars from all over India and even foreign countries who are well conversant with Punjabi language. Library staff feels that the library use is not completely justified due to lack of planning, promotion and publicity of resources of this unique library. Another suggestion given by the library staff was to involve prominent personalities and authors of Punjabi language in forming a committee which could develop a plan for promoting the resources and services of this Punjabi Reference library all over the world.

Standards and Guidelines for Developing Multilingual Collection

Many countries like Australia, Canada, South Africa, U.S.A. and international associations like ALA and IFLA have formulated guidelines and standards for developing multicultural and multilingual collections in different types of libraries. Unfortunately, in India there are no such guidelines and standards – yet guidelines and standards are most essential in a diverse country like India. These are simple guidelines that will facilitate in serving multilingual users of any library. Templates have been designed for developing multicultural and multilingual collections that are easy to follow. There is lack of awareness and initiatives on part of library and information professionals in his regard.

Initiatives in India

The National Knowledge Commission (NKC), first of its kind in the world, was set up in 2005 by the Prime Minister of India with the challenging mandate to transform India of the 21st century into a knowledge society. It was to advise on matters relating to knowledge creation, knowledge dissemination and knowledge application within the diversity of the Indian scenario. NKC proposed to set up a National Translation Mission (hereafter NTM) that would urgently take up the task of identifying gaps, promoting good quality translation, training, disseminating information about translation and translators, and co-ordinating ongoing work by public and private organisations. Translation has been going on between different pairs of languages in the Indian subcontinent for a long time. According to the report, "As a passion, translation has seen many great minds in action in different speech communities in India and elsewhere. As a multilingual and multicultural country, and as one of the oldest knowledge bases, India has been leading in translation for many centuries. With many languages and cultures, this country also provides a rich testing ground for all major theoretical initiatives in both literary and machine translation. It is expected that the proposed NTM will fulfil a long-felt need that would satisfy different

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segments: teachers, learners, language technologists, business groups, newspaper establishments and other media groups, creative writers, readers, those engaged in comparative studies and translation theoreticians. The NTM will have the following objectives:

1. To act as a store-house of information on translation involving Indian languages, and to make information regarding all aspects of translation available – by creating, maintaining and constantly updating information on translations published, training programmes scheduled, translation tools and instruments available and new initiatives, and facilities such as a 'National Register for Translators'.

2. To work as a clearing house for all translation activities, both theoretical and practical, in as many Indian languages as possible:

    ❖ To provide links between users of translated material at different levels and in different activities to the public and private agencies and organisations and individuals involved in translation and translation-related activities involving Indian languages;

    ❖ To prioritise the translation of pedagogic materials at all levels (including primary onwards to tertiary education) specifically in natural and social sciences;

    ❖ To project Indian languages and literatures in this region and abroad through high-quality translation;

    ❖ To create and maintain various tools for translation, and to especially encourage the preparation of bilingual and multilingual bi-directional general as well as special purpose translational dictionaries, word-finders, and thesauri;

    ❖ To promote printed as well as virtual publication of works on Translation Studies jointly or independently for the benefit of all institutions and individuals interested in the field;

    ❖ To provide a forum for dialogue by creating a bulletin board for people to post questions and answers;

    ❖ To provide guidance in the methodology of translation and undertake activities to enrich teaching and training activities in translation studies.

Another significant development by Government of India's Ministry of Communications & Information Technology, Department of Information Technology (DIT) is the initiative Technology Development for Indian Languages (TDIL) Programme with the objective to develop information-processing tools to facilitate human machine interaction in Indian languages and to develop technologies to access multilingual knowledge resources. The Department of Information Technology has commenced a national initiative called National Rollout Plan aggregated Indian language software tools and fonts. They are being made available through a web based Indian Language Data Centre ILDC. The Department also promotes Language Technology standardization through active participation in International and national standardization bodies such as ISO, UNICODE, World-Wide-Web consortium (W3C) and Bureau of Indian Standards (BIS), ELRA, to ensure adequate representation of Indian languages in existing and future language technology standards. The World-Wide Web Consortium (W3C) India has taken a new role in the development of standards and guidelines for developing tools, technologies and web interface accessible for persons with disabilities. The Web Content accessibility guideline [WCAG 2.0] is the key achievement in this direction. In India, though few initiatives have been undertaken towards development and deployment of assistive technologies, still lot more needs to be

done in terms of affordable multilingual assistive technology development, adoption of standards, awareness and education, implementation and policy level aspects to provide web based accessible solutions to include these specially-abled citizens towards nation building. Efforts and initiatives taken in India do not directly pertain to libraries.

The efforts need to be consolidated and directed towards libraries. Indian Library Association and library and information professionals should come together to formulate standards and guidelines for developing multicultural and multilingual collection for different types of libraries. Users of multilingual libraries need to be guided and served properly with maximum information. Cue can be taken from standards provided by various countries, professional associations and templates available. There is no dearth of software with multilingual support are available in India like LIBSYS, SOUL, Shree-Lipi 7.2 software contains various packages, Ankur, Indology and of course the Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Department of Electronics and Information Technology (DeitY), Ministry of Communications & Information Technology (MCIT) and one of the products is Multilingual Computing. Since there is enough technical and technological support effort is required to direct and coordinate it with libraries. India must develop a set of standards and guidelines for developing multicultural and multilingual collections to do justice to its diverse users.

Questions

1. Write down the case facts.

2. What do you infer from it?

Source: http://conference.ifla.org/past/ifla78/162-kaur-en.pdf

3.4 Summary

- Current LMSs are integrated systems based on relational database architecture.

- LMSs are now established as an essential tool in the support of effective customer service, stock management and management of services offered by libraries.

- LMSs support selection, ordering, acquisition, processing, circulation, serials control, dissemination of information services and also extend help in library administration, planning and decision making process as a management tool.

- The basic requirements for any modern library automation package to satisfy such expectations may be studied under two broad categories – general system requirements and functional requirements.

- The LMS must be fully integrated, using a single, common catalogue database for all operations and a common operator interface across all modules.

- The LMS should be based on web-centric architecture and extend support for a range of multi-user and multitasking operating systems and RDBMSs.

- The aim of DMA subsystem is to support search, retrieval and viewing of multiple media formats from client machines by using a web browser.

- The LMSs presently available in India may be ranked in 2nd, 3rd and in between 3rd and 4th generations on the basis of their features.

- Packages are selected for discussion on the basis of their customer base and popularity.

- The package must provide security to prevent accidental or unauthorised modification of records through the establishment of access privileges unique to each user on the system and restriction of specific functions to specific users.

3.5 Keywords

Commissioning: Commissioning is the process of planning, documenting, scheduling, testing, adjusting, verifying, and training, to provide a facility that operates as a fully functional system per the Owner's Project Requirements.

Digital Media: Digital media is a form of electronic media where data are stored in digital (as opposed to analog) form.

Electronic Data Interchange: Electronic data interchange (EDI) is a document standard which when implemented acts as common interface between two or more computer applications in terms of understanding the document transmitted.

Hardware: The machines, wiring, and other physical components of a computer or other electronic system.

Library Management Software: It is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed.

Management Information System: A management information system (MIS) provides information that organizations require to manage themselves efficiently and effectively.

Online Public Access Catalogue: An online public access catalogue is an online database of materials held by a library or group of libraries.

Software: Organized information in the form of operating systems, utilities, programs, and applications that enable computers to work.

System Software: System software is a program that manages and supports the computer resources and operations of a computer system while it executes various tasks such as processing data and information, controlling hardware components, and allowing users to use application software.

Training: Organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him or her attain a required level of knowledge or skill.

Troubleshooting: It is a form of problem solving, often applied to repair failed products or processes.

3.6 Review Questions

1. Discuss the development of Library Automation Software.

2. What are the general functions of Library Automation Software?

3. Explain the commissioning of library automation package.

4. Describe the features of general system requirements.

5. What are the minimum essential features of functional units or modules of any modern LMS?

6. Highlight the current position of LMS available in India.

7. Discuss any two library automation packages of foreign origin.

8. Discuss any two library automation packages developed over foreign software.

9. Explain any three library automation packages of Indian origin.

Answers: Self Assessment

1. False
2. True
3. False
4. True
5. True
6. Develop or Purchase
7. LMS
8. Backup
9. UNICODE
10. OPAC
11. True
12. False
13. True
14. True
15. False

3.7 Further Readings

Books

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Online links

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Unit 4: Problems, Evaluation and Trends in Library Automation Software

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Objectives

After studying this unit, you will be able to:

- Discuss the software problems in Library Automation

- Explain the criteria for evaluation of Library Automation Software

- Describe the trends and future of Library Automation Software

Introduction

The selection of library management software is a complex and time consuming one. Apart from thorough knowledge of library system, sub-systems, procedures, activities and tasks, it requires the knowledge of LMSs features and trends in the development of ICT. The process of evaluation should be based on some predefined criteria. Now in this unit we will study the essential criteria for evaluation, recent trends and future directions of library automation software packages.

4.1 Software Problems in Library Automation

This is the era of computerization, but still tradition manual working system exists in Indian libraries especially in undeveloped area. In the series of development of library world is acclimatized to computer environment in daily routine as well as information storage and retrieval. Automation to a greater extent can reduce pressure of library workload. It also shelters from work stress and fatigue. It not only offers efficient services and opens a new era in bibliographical control but provides access to required database in the country and abroad as well. Computerized library service is likely to be beset with technological, economic and attitudinal problems peculiar to most developing countries.

After a long period of gestation, the libraries in India are now in a take off stage of automation and modernisation. Financial and technical inabilities are the major issues they have to tackle while modernisation. Though funding appears as the biggest problem faced by the libraries in

India, the technical issues of manpower training, procurement of hardware and software, creation and maintenance of databases, etc., also raise serious hindrances in the way of automation. In the digital environment, both hardware and software have critical roles to play. As regards the software requirements, many of the Indian libraries, whether they are financially and technically sound or not, facing problems such as selection of good software, ensuring standards in the creation of databases, maintaining and updating the databases, improving the performance of Information Storage and Retrieval Systems, exchanging data between systems, migrating from one software to another, etc. The tempo of automation and modernisation of libraries is largely affected by the bottlenecks created by these issues, and the professionals are finding it difficult to sort out such problems.

1. *Technological Problems:* Technological problems include both the hardware, i.e., the computer as an instrument for information processing and the software, i.e. the methodology which is applied. The major problems faced today in terms of the hardware are due to the variety of computers being used in different types of research and business institutions. The computers, manufactured by various firm are not compatible. Developing countries sometimes receive sophisticated technology like computers as gifts from more developed countries; these often become obsolete from the manufacturer's point of view.

   Such machines are not only unsuitable for most complex work but any technical problems which come up cannot be repaired. Information retrieval work requires machines more sophisticated than those manufactured indigenously and few imported machines are capable of handling information retrieval applications.

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Caution The random access facility and disks large enough for storage of bibliographic information are not readily available.

   In most institutions, organizational goal receive priority over the library's requirements, meaning that the librarian must use the computer available rather than what is actually required according to specifications. Library activities in all institutions are done through sharing disk space as well as computer time. Therefore, when the storage capacity is not large enough to accommodate various types of data, bibliographic data are given the lowest priority. On-line facilities are rare in India. In fact, only TIFR's library has access to an on-line terminal for bibliographic data, the DEC-1077 computer of the National Centre for Software Development and Computing Techniques.

   The communication infrastructure of India is still not suitable for extensive on-line information facilities; the telephone system is not reliable enough to support an effective network facility. Software problems arise because programmes must be developed in terms of the machine on which they are to operate. Therefore, the incompatibility of equipment tends to make the software incompatible as well, especially when programmes are written in machine or assembly language. While using languages which are not machine bound, such as FORTRAN, COBOL, ALGOL, etc., may seem like a solution, in actual practice such languages cannot be interchanged without suitable modifications.

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Example: A software package developed for the IBM 360 model 30 would require many changes not only in the programme but also in the programming language if it were to run on any other computer. Development of a programme suitable for the available machine is therefore preferable to acceptance of a package programme. This makes the development and use of package programme difficult and leads to a lack of standardization in programming language as well as in output. Machine-readable databases are by-products of international information network systems and are available on magnetic tapes.

Notes

These are useful in building information resources and for retrospective search and current awareness services. Again, however, the tape service is expensive and suitably sophisticated computers are scarce. The databases have a standard format which requires extensive changes to fit existing hardware and other system requirements. Also, relevant bibliographic information has to be selected from the databases and stored. Often this storage space is scarce and expensive.

2. *Economic Problems:* The major obstacle for any innovations in developing countries is the lack of resources. The initial cost of establishing a computer system is beyond the reach of most organizations and institutions. Library and information processing is done either with spare computer capacity made available by the institution itself, or with computer time hired from another institution. The cost of hiring computer time and storage space is very high and often cannot be justified at the management level by cost-benefit analysis.

Example: At IIT, CPU time per hour cost ₹ 1000 for educational purposes and ₹ 2000 for business and industrial use.

Moreover, the computer provides only paper printout, and the paper often cost more than the processing. Few developing countries can afford the machine-readable databases, either. The tapes are very expensive and because foreign exchange is involved in subscribing to them, it is even more difficult for most organizations in India and other developing countries to afford them. The annual subscription rate of one database is now approximately $ 8000. Library tasks often overlap and their peculiar nature seldom makes the advantages of computerization seem very convincing in the light of cost benefit analysis.

In India, libraries and information centres are attached to government organizations or research institutions, so library services cannot be calculated on a profit/loss basis. Long term benefits have to keep in mind while justifying such services. The libraries that have computerized some of their services or operations often have not taken such steps as a result of serious thought. Computerization has glamour of its own in the minds of many librarians. Overly enthusiastic librarians often run uneconomical programmes, producing lengthy listings for instance in the name of computerized service.

Often the manual method is used concurrently with the computerized system because of a lack of faith on the part of staff and users. The duplication of work and the cost involved in these cases is obviously unjustifiable; the librarian should know which aspects of service should be mechanized. An example of an economically visible computerized library activity is the centralized acquisitions but also eliminates the cost of duplicate purchasing.

3. *Attitudinal Problems:* Computers appear very awesome to developing countries. They are powerful machines which can perform many functions and therefore offer a solution to the many types of manual inefficiency which often plague the developing countries. Among librarians there are two groups often give insufficient thought to the real value of the computer to the organization/institution and make uneconomical, haphazard use of the facility.

The other group, still the majority in developing countries, lacks knowledge of the potential and consequences of library automation. There is constant tension between this traditional librarian group and the 'new wave' librarians. Professionals of the majority group do not realize that computers cannot replace human intelligence. Due to the accuracy essential for data input in library services, the librarian/information scientist is indispensable. The National Library of Calcutta conducted an experiment to computerize the Indian National Bibliography in 1968.

The scheme failed, however, because labour unions opposed it fearing retrenchment of library staff. Among developing countries, the attitudes of India's librarians are typical.

They are not confident about automated services. Library staff should therefore be trained in programming and thus be made aware of the work involved in automation. They will then realize that automation will not take away their jobs. They will also realize that computers are machines which have their limitations as well as their advantages. The communication gap between the librarian and the computer specialist is another major hindrance in establishing any effective automated system in a library.

There is often disagreement among the librarian, the programmer and the systems analyst. Librarians should be trained in computer programming and computer specialists should be versed in the special needs of library automation. Only then can a common language evolve among the three and projects are started. Administrative personnel assume a very important role in decision making. Their enthusiasm, support and conviction can help realize any new plan, just as their apathy and lack of understanding of the need for accurate and speedy information can jeopardize any effort. Although many things have taken a favourable turn in India, the majorities of those at the management level unfortunately are not conversant with the development of information science and are unaware of the important role of information in all areas of national development.

This very often results in insufficient planning, which in turn curbs the enthusiasm of imaginative information scientists and librarians. Due to this lack of appreciation, priorities are poorly ordered and funds are not well allocated. Administrators also have a tendency to underestimate or overestimate the capacity of automation. Any information system or service is planned for the best possible benefit to its users. Unless the users are mentally prepared to accept a new system, however, it cannot be effective. Indian users are still unfamiliar and overawed by computers, so computer awareness and interest has to be fostered to enable proper utilization of a system.

They should neither overestimate computer capabilities nor be afraid of interacting with the computer systems. Another obstacle is that, because batch processing systems are still in use in India, there are bulky printouts in monotonous type faces and formats which prove to be a headache not only for the librarian, but also for the user. There is no dearth of manpower in systems analysis and computer programming in India. Library automation is still neglected, however; it is an area which has not attracted young people with appropriate expertise. Training should be given to both the librarian and the computer specialist about each other's functions and possibilities. Both INSDOC and DRTC conduct courses on automation systems in libraries. Under the forthcoming NISSAT plan, steps are being taken to be building the requisite technical manpower.

Notes The Indian government's Department of Electronics is developing training programmes for the National Informatics Centre. There are two main objectives in training for library automation: to orient the programmers and system analysts to writing programmes suitable for automating library facilities, and to persuade librarians to accept the utility of automation and teach them to prepare accurate inputs to make the system worthwhile.

Self Assessment

State whether the following statements are true or false:

1. Automation to a greater extent can increase pressure of library workload.

2. On-line facilities are rare in India.

3. Library activities in all institutions are done through sharing disk space as well as computer time.

4. The National Library of Calcutta conducted an experiment to computerize the Indian National Bibliography in 1978.

5. There is no dearth of manpower in systems analysis and computer programming in India.

4.2 Criteria for Evaluation of Library Automation Software

The following factors should be taken into consideration at the time of evaluation of any library automation package:

1. *Vendor Validity:* The reputation of software development group or the vendor is extremely valuable. The following questions should be raised to judge the validity:

   ❖ Is the vendor also a software developer, or is the vendor a distributor or an agent for the software developer?

   ❖ Is there an international presence or is the company localised?

   ❖ How long has the software developer been in the library systems industry?

   ❖ How long has the library system, you are interested in, been on the market?

   ❖ Who are using their products? (Look for someone in close proximity and contact them for their views on the product. If possible, make an on-site visit to see the product in action.)

2. *Services Availability Checklist:* The services and utilities of any LMS should be checked for the availability of following core, enhanced and value-added services:

   ❖ *Core Services:* Acquisition, cataloguing, circulation, OPAC, serials control, bibliographic format support, data exchange format support, article indexing, retro conversion, standard report and system administration.

   ❖ *Enhanced Services:* Customised report generation, GUI based user interface, reservation facility, interlibrary loan module, multi-lingual support, union catalogue, authority file support and controlled vocabulary, online help, online tutorial, power search facility, internet support, intranet support, web access OPAC, multimedia interface, barcode support and backup utility.

   ❖ *Value-added Services:* Patron self-service through RFID and smart card (self-circulation, self-reservation etc.), online user training/orientation, stock verification facility, members photo ID card generation, barcode generation, fine calculation and receipt generation, gate pass generation, bulletin board services and e-mail reports, electronic SDI, CAS support, digital media archiving support.

3. *Functional Checklist:* The following general features are part of software module testing, and each should be tested or conducted during the evaluation process:

   ❖ Searching Capabilities (All modules)

   ❖ Data Entry and Editing (All modules)

   ❖ Bibliographic/item File and Maintenance

   ❖ Bibliographic Interface Software

   ❖ Authority Control

❖ Inventory (Circulation)

❖ Check-out (Circulation)

❖ Renewal (Circulation)

❖ Circulation/Management Reports (Circulation)

❖ Check-in (Circulation)

❖ Fines and Fees (Circulation)

❖ Notice Production (Circulation)

❖ Holds (Circulation)

❖ Recalls (Circulation)

❖ Patron File (Circulation)

❖ Reserves (Circulation)

❖ Portable Back-up Units

❖ Report Writer

❖ Acquisitions

❖ Serials

❖ Electronic Databases

❖ Gateways

❖ Network Operations

❖ Z39.50 Server

❖ Inter-library Loan

4. *Data Conversion and Backup Utility:* The ability of the package in terms of support for data conversion from other library systems and adherence to the international bibliographic data standards and protocols should be checked extensively. In this age of shared cataloguing systems and web integration, the LMS should also support metadata schemas and interoperability issues like XML, RDF and OAI/PMH. Backup facility in suitable media is also to be checked in view of data recovery at the time of need.

5. *Training, Documentation and Customer Support:* The vendor must provide:

❖ adequate training facilities without fees for supervisor and operators to:

♦ manage and operate the system on a day-to-day basis;

♦ run file backup operations, software utilities and cataloguing utilities;

♦ troubleshoot and solve simple problems and load software enhancement received from the vendor.

❖ complete documentation (in hard copy and machine-readable form) must be available with the package along with regular documentation updates and release notes available for local printing or downloading via web; and

❖ the package must have support from the software vendor for hardware and software maintenance, data conversion, emergency and on-call support and disaster management.

6. *Hardware and Third Party Software Requirements:* The vendor should provide a complete list of hardware requirements (processor type and RAM) for server and client machines, operating system requirements and back end RDBMS (with version) requirements. Evaluation should be based on total cost for minimum hardware and third party software requirements of the package.

7. *Performance Testing:* Any LMS should be evaluated by checking some performance testing like transaction throughput capacity and response time, hardware functionality, module functionality, conversion testing, database loading, index building etc.

Self Assessment

Fill in the blanks:

6. …………………… services includes patron self-service through RFID and smart card.

7. …………………… should be based on total cost for minimum hardware and third party software requirements of the package.

8. Any LMS should be evaluated by checking some …………………… performance testing.

9. …………………… services includes customised report generation, GUI based user interface, reservation facility, interlibrary loan module, multi-lingual support.

10. …………………… services includes acquisition, cataloguing, circulation, OPAC, serials control, bibliographic format support, data exchange format support, article indexing, retro conversion, standard report and system administration.

4.3 Trends and Future of Library Automation Software

The rapid developments of ICT have changed the libraries over the last few decades. The library systems all over the world are going through a process of transformation to address the effects and implications of technological change. In response to the needs of the hour, library automation packages are gradually being upgraded to satisfy diversified demands of library authority, staff and users by incorporating various epoch-making features. Some of these features are selected for discussion here on the basis of their importance and utilities in library management.

1. *Unicode:* Unicode enables the input and display of different languages of the world in their native scripts. Unicode complaint LMSs are able to dynamically change language at any point without affecting other system users.

Example: A librarian could catalogue a record in English, and then change languages to enter record in Hindi, Bengali, Tamil, Marathi, etc.

Unicode is a character representation standard like ASCII. ASCII is one byte (8 bits) code and can represent only 28 i.e. 256 characters, whereas Unicode is two byte code (16 bits) and can represent 216 i.e. around 65,000 characters. As a result Unicode standard can represent all the scripts of the world including some obsolete scripts such as Bramhi and Kharosti. Unicode provides two encoding formats – UTF-16 (default) and UTF-8 and the present standard (Unicode 4.0) can represent 50,000 characters. The fully functional multi-lingual system requires the Unicode support by operating system, programming languages, application software and word processors. Unicode support for LMSs is essential in multilingual countries like India.

2. *Z39.50 Information Retrieval Protocol:* The growth of shared cataloguing and cooperative cataloguing initiatives allow capturing bibliographic data from remote library servers

over the Internet. It reduces unit cost of cataloguing and saves a lot of time for individual libraries. However, the major problem is of variation in software and hardware. Library professionals have to learn the specific features of each system. More the electronic resources grow more will be the confusion on how to access the information from diverse databases. ANSI/NISO Z39.50 standard was developed to share the bibliographical information electronically and to overcome the problems of database searching with different search languages. Z39.50 is a session oriented program-to-program open communication protocol based on client-server computing model. LMS incorporated with Z39.50 copy-cataloguing client (called origin in the standard) submits a search request to any Z39.50 server (called target), which then process the request and returns the result in desired standard. LMS will then place the captured record in the catalogue editor for manipulation.

3. *Web-centric Architecture:* Web-centric LMSs allow web based staff and user access and thereby ensures searching, browsing, data entry and system Introduction administration from anywhere at any time against user authentication. In such a system, there is no requirement to install client-side software in client computers. Any machine with standard web browser may be used as client for accessing library database. This architecture applied Common Gateway Interface (CGI) and Hypertext Transfer Protocol (HTTP) to ensure platform independent access to library services. It also helps to overcome space and time barrier.

4. *Integrated Access Interface:* Integrated access interface refers to the ability of LMSs to combine multitude of resources and media type in a single and seamless search mechanism. Such interface should support hypermedia environment to include:

    ❖   Library catalogue

    ❖   Collection acquired in digital form

    ❖   Collection digitised in-house

    ❖   E-journals and e-books

    ❖   Purchase datasets on CD ROMs

    ❖   Subject gateways

    ❖   Other library's OPAC

    ❖   Bulletin board, Listserv and Discussion forum

    ❖   Information desk

    ❖   Community information

5. *FRBR based Bibliographic Data Model:* FRBR stands for Functional Requirements for Bibliographic Records. It is a conceptual model, proposed and designed by IFLA (International Federation of Library Associations), for the management of bibliographic databases. The model uses entity-analysis techniques to identify entity, attributes and relationships in the bibliographic universe. It also identifies the relevance of each attribute and relationship to the generic tasks performed by users of bibliographic data. Packages are incorporating FRBR model for the design of central catalogue database. Interoperability and Crosswalk: Interoperability means the ability of multiple systems (with different hardware and software platform and data structure interface) to exchange data with minimal loss of content functionality. A crosswalk is a mapping of the elements, semantics and syntax from one metadata schema to those of another. It allows metadata created by one community to be used by another group that employs a different metadata standard. Interoperability and crosswalk ensures exchange of bibliographic data among heterogeneous systems across the globe. LMSs are now supporting various standards and

protocols like Z39.50, OAI/PMH, METS (Metadata Encoding and Transmission Standard) and MARC-XML to achieve interoperability.

6. ***RFID and Smart Card Based Inventory Control:*** Radio Frequency Identification (RFID) is the technology that is slated to replace barcodes in library applications. The RFID tags are placed in books and generally covered with the sticker. RFID reader and antenna are often integrated into patron self-checkout machines or inventory readers. The reader powers the antenna to generate RF field to decode information stored on the chip. Reader sent information to the central server, which in turn communicates with the library automation software. LMSs are incorporating RFID technology for performing self-issue and return, stock verification, theft detection, identification of misplaced books and inventory counts.

Did u know? RFID compliant LMS increases staff productivity and ensures full-proof security.

Smart card technology is used in libraries to manage public access resources. It makes the process user friendly for librarians as well as for patrons. It supports self-checkout, payment of fees and fines and use of public access resources through using one smart card by patrons. The system also provides excellent privacy, security options and personalisation of services for library users.

7. ***Open Source Software:*** Open Source Software (OSS) is software for which the source code is freely available. It means that anyone can access the source code and make changes. Such facilities are not available with proprietary or closed source programs. Some examples of open source software are – Linux operating system, Mozila web browser, MySQL RDBMS, Apache web server and PERL. The open source movement has its roots in the 1970s, and is continuing to grow in popularity. Number of integrated library automation packages is available as OSS for downloading and use in libraries all over the world, such as KOHA, MyLibrary, Avantika etc. Generally, these packages are based on LAMP architecture i.e. Linux operating system, Apache web server MySQL RDBMS and PERL/PHP as scripting language. Many libraries, faced with budgetary crunches and the resultant lack of technological resources, have opted for open source solutions. The advantages of using OSS for library management are:

   ❖ Open source systems, when licensed in the typical "general license" manner, cost nothing (or next to nothing) to use – whether they have one or one thousand users. Thus use of OSS offers substantial cost savings for libraries.

   ❖ Open source product support is not locked into a single vendor. The community of developers for a particular open source product tends to be a powerful support structure because of the pride in ownership. Also, anyone can go into business to provide support for software for which the very source code is freely available. Thus even if a library buys an open source system from one vendor, it might choose to get technical support from another company – or to arrange for technical support from a third party at the time of purchase. On top of this flexibility, any library with technical staff capable of understanding source code might find that its own staff might provide better internal support because the staff could have a better understanding of how the systems work.

Did u know? The entire library community might share the responsibility of solving information systems accessibility issues and OSS can be highly customised to meet individual library needs.

Task Identify the criteria for evaluation of library automation packages.

Self Assessment

State whether the following statements are true or false:

11. Unicode support for LMSs is essential in developing countries.

12. ANSI/NISO Z39.50 standard was developed to share the bibliographical information electronically.

13. FRBR refers to the ability of LMSs to combine multitude of resources and media type in a single and seamless search mechanism.

14. RFID is the technology that is slated to replace barcodes in library applications.

15. Open Source Software (OSS) is software for which the source code is freely available.

Case Study **Adoption and User Perceptions of Koha Library Management Systems in India**

Free software are those which are available free of cost with source code. According to Free Software Foundation "Free software" means software that respects users' freedom and community. The users have the freedom to run, copy, distribute, study, change and improve the software. With these freedoms, the users (both individually and collectively) control the program and what it does for them". The two terms, "free" and "open source" are used synonymously for free distribution of software. Free and Open Source software movements are two ideological groups working for free distribution of software. Both groups strongly believe in community participation and peer review. Libraries are attracted to open source technology not only due to its free availability, but due to its attractive philosophy. Open source software suggestions for improvement. Thereby, the work is continuously edited and refined.

Koha open source library management system is a new entrant into library automation marketplace in India. The work on Koha started in September 6, 1999 by Catipo Communications following a request from Horowhenua Library Trust, New Zealand. Horowhenua Library Trust implemented Koha in January 1, 2000 and the Trust released Koha under the most popular and flexible GNU General Public License for deriving support from the global community and ensuring future development of the system. The same year Koha was deployed in St. Joseph's College, Devagiri in the Indian state of Kerala. This is considered to be the first Koha installation in India. Thereafter, there have been a number of Koha installations in India and the group of active Koha users in India is growing. The annual conference of Koha developers and users called 'Kohacon' held in Pune, India in 2011 was a recent significant milestone.

Koha in India

Adoption rate of open source library management systems in India is comparatively slow due to a variety of reasons ranging from lack of awareness among library professionals to

low computer literacy skills compared to other open source library management Koha in 2007. The Library has a collection of over 15 lakh books. During the initial stages a significant portion of the records from CDS/ISIS database were exported to Koha.

Granthalaya (www.granthalaya.org) is another prestigious automation project which uses Koha. This project envisions a union catalogue of public libraries in Konkan region Maharashtra, India. Central Library and other Departmental libraries in Cochin University of Science and Technology adopted Koha and became fully functional in 2009. In Tamilnadu, 32 district libraries and Connemara Public Library were automated and networked using Koha with the help of AU-KBC Research Centre of Anna University Chennai with support from the NRCFOSS Project (National Resource Centre for Free/Open Source Software) funded by the Department of Information Technology, Govt of India. Anna Centenary Library in Chennai also selected Koha for its automation purpose.

Mysore University successfully migrated to Koha from legacy system in 2010. British Council Libraries in India and Sri Lanka selected Koha for automation and networking its libraries. They serve 120,000 members through ten libraries. British Council Library online catalogue started its service and is available at www.library.britishcouncil.org.in. Koha has been customized in Bengali script for the purpose of automating academic and public libraries in West Bengal.

The Government of Kerala has in principle made a decision to make Koha as its official software for computerization of Government administered libraries. Educational institutions under Institute of Human Resources Development (IHRD) have adopted Koha in their libraries by providing in-house training for library professionals. IHRD is an autonomous body under Government of Kerala which owns around 50 educational institutions.

Training and awareness can eliminate misconceptions of many library professionals regarding open source software. Professional organisations, library schools and prestigious libraries in India have organised Koha workshops. DELNET, NCSI, DRTC, Kerala Library Association, Cochin University, University of Kerala, University of Burdwan, Mahatma Gandhi University, NISCAIR and OSS Labs have organised Koha training. Many learning and installation aids have been developed for Koha training programmes. Koha Live CD is a helpful tool using which librarians can install Koha easily without the help of a Linux expert. DRTC, Bangalore developed a live CD suitable for learning purpose and installation. Koha, DSpace and other applications are also included in the live CD.

Delhi Public Library

Delhi Public Library was established in 1951 by Government of India with the assistance of UNESCO. The library has a collection of 1.5 million books and 35 library outlets located in various parts of the Delhi city. The library serves 73,467 users. Average number of books issued per day is 33789.

Delhi Public Library began to use computers since 1995. In 1997, the library started to use CDS/ISIS to create the database of books received under the Delivery of Books and Newspapers Act. Koha was implemented in 2007 and its online catalogue is also available. About 52,681 records in English and 38,180 records in Hindi were transferred to Koha from CDS/ISIS and 2,33,304 record details were entered in Koha till 12th January 2012. Records from all Indian languages are available and regional language searching is also enabled in Delhi Public Library through the online catalogue.

The library implemented the automation project using Koha with a relatively low cost. They utilised the maximum in-house manpower for project related works. Library had sought only the services of an IT company for the installation of a server computer.

According to library officials, this company had limited involvement in the implementation, configuration, and operation of the Koha software and did not have previous experience with library automation. The company had only expected to gain experience with Koha through its involvement in this project.

Retrospective conversion from legacy system is a fear factor for many libraries with huge collection of records. But Delhi Public Library could overcome the situation with the help of appropriate cost effective open source automation solution by relying on their staff. This practice helped the Delhi Public Library to gain full control over their automation system and data.

Mysore University Library

Mysore University Library switched from a proprietary automation system to Koha in 2010 after an intensive evaluation. In their experience, proprietary legacy systems are not suitable for long term service and decided to find a suitable open source library automation system. "After an extensive survey and analysis, an Expert Committee consisting of senior library professionals and teaching faculty of University of Mysore recommended the adoption of Koha".

Availability of features suitable for university library, third party commercial support, and active development due to its strong community world over is the main factors favourable to Koha. Fifty eight libraries come under the purview of library automation project using Koha in Mysore University. It includes the Main Library, libraries of five colleges, thirteen institutions and thirty six Departments. About ten lakh (one million) records will be available in the final stage of migration. Centralised database, decentralised inputting and housekeeping activities and Universal access to OPAC are the main features of the Koha implementation in Mysore University. The university has hosted Koha on cloud hosting environment and no additional investment on server, maintenance, manpower, air-conditioning, etc. were done. Dr. I.R.N. Goudar, Visiting Professor-cum-Library Advisor says, "We have not even spent one third of what we would have spent for a medium priced commercial LMS. The amount we paid to our service provider covered installation and configuration, migration of existing data, training, little bit customization, hosting initially on cloud hosting environment and AMC for one year".

Scholarly literature published on the impact of open source library management system among Indian libraries is limited.

Technical Support

Installation and maintenance of Koha was difficult for library professionals because of its complex installation procedure. Koha support using community resources is free. Highly detailed user manuals, installation procedures, data migration assistance, active discussion forums and blogs are very helpful for library professionals (91.18%) who like to maintain Koha without using the help of commercial service providers. Majority of Koha users participated in this survey made use of community resources for Koha installation and maintenance. Very few Koha users (8.82%) approached commercial Koha service companies for Koha installation and maintenance. Assistance from commercial Koha service companies are very helpful in data migration from legacy systems, customisation, development and online hosting.

Koha Live CD

Manual installation of Koha is time consuming and requires the expertise of a Linux administrator. Majority of the libraries (69.70%) that participated in this survey installed Koha manually and 30.30% of libraries installed Koha with the help of Koha live CD.

Many learning and installation aids for Koha are now available for the help of library professionals. Koha Live CDs are useful for installation and learning purpose. It assists the librarians to install Koha in their library without the help of a Linux expert. Linux operating system and Koha are bundled together in the live CD. Installation process is simple and Koha is ready to use after the completion of installation from live CD. Availability of Koha live CD can be one of the reasons that increased the popularity of Koha among library professionals in India.

Difficulties in Moving to Koha

Data migration, network problems, protest from staff, and approval from organisation are the main problems encountered by Indian libraries in Koha adoption process.

Libraries have no control over the proprietary software system and data. By purchasing a proprietary automation system, library does not get the ownership of the software. Library only gets the privilege to use the system till the end of the service period. Often the vendor of library management system does not give provision to export data in the standard format (e.g. MARC). In certain cases libraries have to make additional payment to terminate the services and get back the data if they like to switch over to a new system.

Display and Screen Layouts

Koha's web interface is easy to use by both library professionals and end users. Web 2.0 features are also added for the enhancement of user experience. Users can change the display and layouts for matching with the theme and aims of the library. Layouts are suitable for adding external elements like social network widgets, bookmarking tools and dynamic contents. Koha users (35.71%) have expressed that display and layouts are excellent.

User Manuals

About 51.85% Koha users have expressed their satisfaction level as very good. Koha community maintains an extensive online user manual with screen shots with the help of library professionals. In addition, Koha has an onscreen pop-up screen in every page for instant help.

Ease of Cataloguing

Koha makes use of MARC 21 and UNIMARC standard for cataloguing framework. It also attached Z39.50 standard for downloading the cataloguing details from remote library servers (e.g. Library of Congress). Koha lacks customised cataloguing framework with minimum data entry fields. It displays all MARC fields and users have to customise it to minimum number of fields required for the library. This feature may cause difficulty for new Koha users. Among Koha users, 32.14% marked ease of cataloguing as excellent and 53.57% marked it as very good.

Circulation

The circulation module of Koha was the most highly rated module with 51.72% rating it as excellent. Circulation process in Koha is time saving and it helps to complete the circulation transactions with ease. Circulation module options are attached to the universal task bar and library staff can easily switch to check in or check out of documents during other works.

Acquisition

Acquisition module is in transition process and lots of changes have been added to the latest version. Placing and receiving orders in a few steps is the advantage of acquisition

module. Creating budget and proper allocation of funds will help to give control over library finance. About 22.22% rated this module as excellent and about 33.33% rated is as good.

Serials Management

Serials management module does not connect with budget and it lacks article indexing feature. Due to these reasons, serials management module could find much acceptance among Koha users. Only 7.41% of users rated it as excellent and 11.11% of users stated that the serial management module is poor.

Koha Open Source library management system is a new candidate in Indian library automation market. Survey result shows that majority of the libraries (52.94%) which adopted Koha had no automation system before and other segment of users (47.06%) migrated to Koha from proprietary systems. It indicates that Indian libraries have recognised the capabilities of Koha features and its suitability to implement in any type of libraries. To a certain extent, availability of Koha Live CD is a factor behind the popularity of Koha in India. About 30% of libraries installed Koha using Live CD. Koha Live CD gives opportunity to try Koha in libraries without technical support.

According to majority of users, data migration from legacy system to Koha is a hard nut to crack in implementation stage. Other barriers while implementation stage are Internet connectivity, protest from staff and approval from organisation. Koha users (61.76%) are satisfied with the overall performance of Koha. Circulation module is the most favourite module of Koha and 51.72% of users have expressed excellence about the performance of this module. Financial management of periodicals is not possible and users are not satisfied with serial management module.

Implementation of Koha in reputed libraries in India has given enough publicity among library professionals. News regarding Koha implementation in Delhi Public Library, Mysore University, British Libraries and Connemara Public Library etc. has appeared in popular online discussion forums like LIS Forum and has come to the attention of library professionals. A few library science departments and institutions in India have already started teaching Koha.

Questions

1.   Write down the case facts.

2.   What do you infer from it?

Source: http://nopr.niscair.res.in/bitstream/123456789/15700/1/ALIS%2059(4)%20223-230.pdf

4.4 Summary

● In the digital environment, both hardware and software have critical roles to play.

● The tempo of automation and modernisation of libraries is largely affected by the bottlenecks created by these issues, and the professionals are finding it difficult to sort out such problems.

● Technological problems include both the hardware, i.e., the computer as an instrument for information processing and the software, i.e. the methodology which is applied.

● The major obstacle for any innovations in developing countries is the lack of resources.

● In India, libraries and information centres are attached to government organizations or research institutions, so library services cannot be calculated on a profit/loss basis.

- The reputation of software development group or the vendor is extremely valuable.

- The ability of the package in terms of support for data conversion from other library systems and adherence to the international bibliographic data standards and protocols should be checked extensively.

- The rapid developments of ICT have changed the libraries over the last few decades.

- Unicode is a character representation standard like ASCII.

- Z39.50 is a session oriented program-to-program open communication protocol based on client-server computing model.

- FRBR is a conceptual model, proposed and designed by IFLA (International Federation of Library Associations), for the management of bibliographic databases.

- The RFID tags are placed in books and generally covered with the sticker.

4.5 Keywords

Checklist: A checklist is a type of informational job aid used to reduce failure by compensating for potential limits of human memory and attention.

Common Gateway Interface: Common Gateway Interface (CGI) is a standard method for web server software to delegate the generation of web content to executable files.

Enhanced Services: Enhanced service is service offered over commercial carrier transmission facilities used in interstate communications that employs computer processing applications that act on the format, content, code, protocol, or similar aspects of the subscriber's transmitted information; provides the subscriber with additional, different, or restructured information; or involves subscriber interaction with stored information.

Hypertext Transfer Protocol: It is a TCP/IP based communication protocol which is used to deliver virtually all files and other data, collectively called resources, on the World Wide Web.

Open Source Software: Open Source Software (OSS) is software for which the source code is freely available. It means that anyone can access the source code and make changes.

Radio Frequency Identification: Radio Frequency Identification (RFID) is the technology that is slated to replace barcodes in library applications.

Retrenchment: Retrenchment is an act of cutting down or reduction, particularly of public expenditure.

Software Package: A program for performing some specific function or calculation which is useful to more than one computer user and is sufficiently well documented to be used without modification on a defined configuration of some computer system.

Specifications: A specification (often abbreviated as spec) may refer to an explicit set of requirements to be satisfied by a material, design, product, or service.

Systems Analyst: An individual in charge of designing, modifying, or analysing various systems to ensure compatibility and user effectiveness.

Unicode: Unicode is a computing industry standard for the consistent encoding, representation and handling of text expressed in most of the world's writing systems.

Value-added Services: A value-added service (VAS) is a popular telecommunications term for non-core services, or in short, all services beyond standard voice calls and fax transmissions.

4.6 Review Questions

1. Discuss the Technological Problems in Library Automation.

2. What is the major obstacle for any innovations in developing countries?

3. Explain the attitudinal problems in Library Automation.

4. Describe the features are part of software module testing.

5. Discuss FRBR based Bibliographic Data Model.

6. Write brief note on Open Source Software.

7. What is Radio Frequency Identification?

8. Describe integrated access interface.

9. What is Z39.50?

10. Discuss Unicode.

Answers: Self Assessment

1.	False	2.	True
3.	True	4.	False
5.	True	6.	Value-added
7.	Evaluation	8.	Performance
9.	Enhanced	10.	Core
11.	False	12.	True
13.	False	14.	True
15.	True		

4.7 Further Readings

Books

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Notes

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Unit 5: Management of Library Automation

CONTENTS

Objectives

Introduction

Objectives

After studying this unit, you will be able to:

- Discuss the planning in Library Automation

- Explain the formats and standards in Library Automation

- Describe the Retrospective Conversion

Introduction

A successful library automation project depends on good management. Library management requires attention to a wide variety of strategies or techniques in embracing change caused by library automation. The most important is management and development of library human resources. How library managers deal with the major factors that need to be considered in this changing environment, will largely determine how successful that change will be.

5.1 Planning in Library Automation

Planning for library automation has been defined as planning for "integrated systems" that computerize an array of traditional library functions using a common database. While this is

still generally true, rapid technological change is forcing a re-examination of what it means to "automate the library." As physical, spatial and temporal barriers to acquiring information continue to crumble, libraries must plan for a broader and more comprehensive approach to providing automated services.

Four years ago, the authors anticipated:

- vastly expanded storage of indexes, statistical data bases, and document databases within the library;

- full-text storage of documents, complete with full-text keyword searching and on-demand printing;

- access by users to library databases from home or office, with direct downloading of information and text on demand;

- the ability to access remote databases across the country and the world, and to download information and text on demand;

- storage of pictorial and graphic material; and

- availability of "intelligent systems" providing transparent, one-step searching and access to various library in-house and remote databases.

These capabilities and far more have become reality. Accordingly, today's integrated system must not only provide access to the traditional cataloguing, circulation, public catalogue (OPAC) and acquisitions modules, but must be capable of connecting through the local system into the systems of other vendors, remote bibliographic databases, CD-ROM drives on a local area network (LAN), and the Internet. Users are expecting that their library systems be capable of, among other things:

- providing seamless integration between system gateway and OPAC modules;

- providing access for external users on the Internet to the library's OPAC;

- monitoring the usage of remote databases that have been accessed through the gateway; and

- accessing the Internet using a variety of graphical interfaces.

Essentially, what this means is that libraries must plan to use a local library system as a vehicle for achieving access to resources outside that system. Stimulated by the Internet, which has created universal connectivity to information resources heretofore unknown and/or inaccessible and by Z39.50 interoperability standards and "gateways," users of individual local systems are expecting to access the resources of other systems – anywhere and anytime. Moreover, the traditional definition of "publishing" has been stretched by the creation and instant availability of informational home pages and Web sites worldwide.

![Caution triangle icon]

Caution Given such increased complexities and heightened levels of expectation, libraries must learn all the more how to plan for the introduction of automation in an organized and systematic fashion. There is little mystery involved here: It is entirely a matter of building upon what you already know about your library, using tools that are readily at hand and, most importantly of all, involving the people – staff and users – who must live with the consequences of any automation decisions.

A library planning to automate should undertake a process by which representative staff and users can identify service needs and objectives. The purpose of such an effort is to allow participants to articulate their interests and concerns, share perspectives and learn about

possibilities in a collaborative setting. Group interaction is an important contributing factor in the success of the goal, which is to develop and sustain library automation in the years ahead.

Here are the basic steps involved in this process:

- Plan on a two-day, intensive planning effort.

- Ask participants to identify strengths, weaknesses, opportunities and threats in the library's environment (known as "SWOT" factors in strategic planning) that are characteristic of or that confront the library.

- Group these factors into critical issue areas that are likely to have an impact on the libraries' future in developing and sustaining automation.

- Ask participants to identify ideas and perceptions in relation to the question: "How do you see the library providing user-friendly, cost-effective automated services in five years?"

- Through a method of your own devising, ask participants to prioritize all of the ideas that come out of the above two "brainstorming" exercises.

- Ask participants to shape these priorities into the draft of a strategic "vision" for automation development consisting of a statement of purpose, goals and objectives for the library.

The strategic vision must provide the framework or context for the next step in the automation process, which is to determine which library functions should be automated and in what order of priority.

Example: Processes that are repetitive, occupy large amounts of staff time, require retrieving information from large, unwieldy files, or are high-profile functions of the library (such as the public catalogue) are prime candidates for automation.

Determining the functions that you wish to automate and their priorities relative to each other is important for all sorts of reasons. If needs and priorities are clear, functions can be automated in phases, allowing for more effective use of frequently scarce funding. Moreover, it is a way to develop credibility with funding agencies and be able to take advantage of "sudden" funding opportunities. Finally, evaluations of systems and options will be easier and more productive if you are able to match your highest functional priorities against the corresponding modules available in the marketplace.

Planners need to be aware that there are certain cost elements involved in the installation and operation of any automated system. These may be summarized as follows:

- Planning and Consulting Costs include direct, out-of-pocket costs (e.g., hiring a consultant) and indirect costs (e.g., training staff) associated with getting started.

- Purchase of the System includes the cost of acquiring the initial system hardware and software, as well as the cost of preparing a site for the computer system.

- Telecommunications costs are those fees paid to telecommunications companies or agencies for connecting remote terminals or workstations to a central computer system.

- Conversion costs are those associated with the creation of machine-readable bibliographic and, for circulation systems, patron, records.

- Additions to the Existing System may be required to maintain performance specifications, to accommodate new users, or to allow for additional automated functions.

- On-going Operating costs include:

  ❖ maintenance fees

Notes

❖   utility costs

❖   bar code labels

❖   miscellaneous supply costs

❖   telecommunications costs

❖   salaries and benefits (if extra staff are hired)

Computer technology and software applications are changing and evolving at an incredibly rapid pace. At current rates of development, you can expect that by the time you install your carefully planned system, capabilities will be available that were only in planning while you were evaluating vendor proposals. In general, a life cycle of five years is considered to be acceptable for a computer system before some significant upgrade (installation of additional hardware and/or software providing for increased capability or capacity) or replacement will be necessary.

Because computer and information technology represent a fundamental change in the way libraries do business, libraries must make an ongoing commitment to keeping pace with change. Therefore, like automated systems, plans must also change with time.

Plans must be regularly revisited and updated as the environment and needs change. In general, a library should conduct a major re-examination of its plan every five years, and should review its plan on an annual basis.

Task   Critically examine the outcomes of good planning in library automation.

Self Assessment

State whether the following statements are true or false:

1.   The traditional definition of "publishing" has been stretched by the creation and instant availability of informational home pages and Web sites worldwide.

2.   Group interaction is an important contributing factor in the success of the goal.

3.   Purchase of the System includes direct, out-of-pocket costs and indirect costs associated with getting started.

4.   Computer technology and software applications are changing and evolving at an incredibly rapid pace.

5.   A life cycle of seven years is considered to be acceptable for a computer system before some significant upgrade or replacement will be necessary.

5.2 Formats and Standards in Library Automation

The concept of "standard" in the field of library and information science is interpreted as codes of cataloguing rules, classification schemes, subject headings and various other documents contained recommendations for good library practice, all of which are subject to varying interpretation. But, for another professional, standards are extremely precise technical specifications for communication between software and machines in an automated information-processing environment.

Example: Operating Systems, TCP/IP etc.

Standards are documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose. Field of bibliographic standards are not limited to the rules only but spread up to the authority files such as person names, corporate names, subject headings, classification schemes, series names, institution names, software and standardization form and format etc. In beginning, during the initiation of automation to library professionals, there was not much focus on bibliographic standards and were creating databases in any formats. That affected to the automation of their libraries, which forced them to think over the issue. Now, gradually, the libraries and information centres are realizing the importance of bibliographic standards. Centres like Information and Library Network (INFLIBNET), Ahmedabad is playing important role in bringing all libraries together to work on a single platform of standards with linking under one huge national network i.e. UGC-Infonet. INFLIBNET Centre is an Inter-University Centre of University Grants Commission (UGC), working on Academic library system in India. In 1990, UGC launched it as a programme for five years on pilot basis. On June 1996, the programme was recognized as a full-fledged Centre.

Different subject headings list are available, developed by different institutions such as LCSH, Sear's List of Subject Headings, MeSH, Thesaurus etc. There is various classification schemes have been developed by different organizations for classifying the books on different subjects. Functionally, most of the libraries are using the Dewey Decimal Classification (DDC) for assigning the Classification Number to the documents. But, under INFLIBNET umbrella, all the libraries are free to use any classification scheme for classifying the document, as it is very difficult for any library to reclassify the entire collection based on any new scheme. As per the library practice any classification scheme can be used as MARC21 has capability to adopt any kind of classification schemes.

For libraries in India, it is very difficult to strict with any format and standard, due to libraries are not well recognized by their institutions and having lack of skilled manpower. A financial crunch with lack of skilled manpower is threat for the Indian libraries for keeping themselves with the pace of latest technology including the intruders like computer professionals. But to survive in the field, one has to go through the standards and control the quality in automation.

Did u know? What is MARC Standards? MARC (Machine-Readable Cataloguing) standards are a set of digital formats for the description of items catalogued by libraries, such as books. It was developed by Henriette Avram at the US Library of Congress during the 1960s to create records that can be used by computers, and to share those records among libraries. By 1971, MARC formats had become the national standard for dissemination of bibliographic data in the United States, and the international standard by 1973. There are several versions of MARC in use around the world, the most predominant being MARC 21, created in 1999 as a result of the harmonization of U.S. and Canadian MARC formats, and UNIMARC, widely used in Europe. The MARC 21 family of standards now includes formats for authority records, holdings records, classification schedules, and community information, in addition to the format for bibliographic records.

5.2.1 The MARC 21 Formats

The MARC 21 formats are standards for the representation and communication of bibliographic and related information in machine-readable form. A MARC record involves three elements: the record structure, the content designation, and the data content of the record.

- The *structure* of MARC records is an implementation of national and international standards, e.g., Information Interchange Format (ANSI Z39.2) and Format for Information Exchange (ISO 2709).

- *Content designation*, the codes and conventions established to identify explicitly and characterize further the data elements within a record and to support the manipulation of those data, is defined in the MARC 21 formats.

- The *content* of most data elements is defined by standards outside the formats, e.g., Anglo-American Cataloguing Rules, Library of Congress Subject Headings, National Library of Medicine Classification. The content of other data elements, e.g., coded data section 9 below), is defined in the MARC 21 formats.

A MARC 21 format is a set of codes and content designators defined for encoding machine-readable records. Formats are defined for five types of data: bibliographic, holdings, authority, classification, and community information.

- MARC 21 *Format for Bibliographic Data* contains format specifications for encoding data elements needed to describe, retrieve, and control various forms of bibliographic material. The MARC 21 Format for Bibliographic Data is an integrated format defined for the identification and description of different forms of bibliographic material. MARC 21 specifications are defined for books, serials, computer files, maps, music, visual materials, and mixed material. With the full integration of the previously discrete bibliographic formats, consistent definition and usage are maintained for different forms of material.

- MARC 21 *Format for Holdings Data* contains format specifications for encoding data elements pertinent to holdings and location data for all forms of material.

- MARC 21 *Format for Authority Data* contains format specifications for encoding data elements that identify or control the content and content designation of those portions of a bibliographic record that may be subject to authority control.

- MARC 21 *Format for Classification Data* contains format specifications for encoding data elements related to classification numbers and the captions associated with them. Classification records are used for the maintenance and development of classification schemes.

- MARC 21 *Format for Community Information* provides format specifications for records containing information about events, programs, services, etc. so that this information can be integrated into the same public access catalogues as data in other record types.

The MARC 21 formats are maintained by the Library of Congress in consultation with various user communities.

- Through maintenance and revision, content designation is added to and existing content designation is made obsolete or deleted from formats. Content designation is made obsolete when it is found to be no longer appropriate or when the data element involved is no longer needed. An obsolete content designator may continue to appear in records created prior to the date it was made obsolete. Obsolete content designators are not used in new records. A deleted content designator is one that had been reserved in MARC 21 but had not been defined or one that had been defined but it is known with near certainty that it had not been used.

- The principles stated in this document have developed over time. The formats contain exceptions to the principles due to early format development decisions. While many exceptions have been made obsolete, others remain because of the need to maintain upward compatibility of the formats in current development.

The MARC 21 formats are communication formats, primarily designed to provide specifications for the exchange of bibliographic and related information between systems. They are widely used in a variety of exchange and processing environments. As communication formats, they do not mandate internal storage or display formats to be used by individual systems.

The MARC 21 formats particularly the bibliographic and authority formats were initially developed to enable the Library of Congress to communicate its catalogue records to other institutions. The formats have had a close relationship to the needs and practices of North American libraries with universal collections. They reflect both the various cataloguing codes applied in the library community and the requirements of the archives community.

The MARC 21 formats were designed to facilitate the exchange of bibliographic and related information. An attempt has been made to preserve compatibility with other national and international formats, e.g., UKMARC and UNIMARC.

Notes National agencies in the United States and Canada (Library of Congress, National Agricultural Library, National Library of Medicine, United States Government Printing Office, and National Library of Canada) are given special emphasis and consideration in the formats because they serve as sources of authoritative cataloguing and as agencies responsible for certain data elements.

A MARC record consists of three main sections: the leader, the directory, and the variable fields.

- The *leader* consists of data elements that contain coded values and are identified by relative character position. Data elements in the leader define parameters for processing the record. The leader is fixed in length (24 characters) and occurs at the beginning of each MARC record.

- The *directory* contains the tag, starting location, and length of each field within the record. Directory entries for variable control fields appear first, in ascending tag order. Entries for variable data fields follow, arranged in ascending order according to the first character of the tag. The order of the fields in the record does not necessarily correspond to the order of directory entries. Duplicate tags are distinguished only by location of the respective fields within the record. The length of the directory entry is defined in the entry map elements in Leader/20-23. In the MARC 21 formats, the length of a directory entry is 12 characters.

Caution The directory ends with a field terminator character.

- The data content of a record is divided into *variable fields*. The MARC 21 formats distinguish two types of variable fields: variable control fields and variable data fields. Control and data fields are distinguished only by structure. The term fixed fields is occasionally used in MARC 21 documentation, referring either to control fields generally or to specific coded-data fields, e.g., 007 (Physical Description Fixed Field) or 008 (Fixed-Length Data Elements).

5.2.2 UNIMARC (Universal MARC Format)

UNIMARC is an international standard maintained by the International Federation of Library Association and Institutions (IFLA) to facilitate the international exchange of data in

machine-readable form between national bibliographic agencies. SirsiDynix Symphony supports the UNIMARC bibliographic, authority, and Z39.50 formats.

The following UNIMARC catalogue formats are delivered:

● UNIMARC (Bibliographic)

● SUNIMARC (Serials)

The following UNIMARC authority formats are delivered:

● UCOLUNITTL (Collective uniform title heading)

● UCRPNAME (Corporate name heading)

● UFAMNAME (Family name heading)

● UGENRE (Form or genre heading)

● UNAMCOLTTL (Name/collective uniform title heading)

● UNAMTITL (Name/title heading)

● UPERNAME (Personal name heading)

● UPLACE (Place access)

● UPORASSUN (Bib.NacPortugal assunto)

● URAMEAU (Sujet Rameau)

● USUBJ (Topical subject heading)

● UTERNAME (Territorial/geographic name heading)

● UTRDMARK (Trademark heading)

● UUNITITL (Uniform title heading)

The following Z39.50 formats are delivered:

● ZUNIAUTH (Z39.50 authority)

● ZUNIMARC (Z39.50 bibliographic)

5.2.3 Common Communication Format (CCF)

CCF is a structure format for creating bibliographical records and for exchanging records between groups of information agency and libraries. An international symposium in Taormina, Sicily conducted by UNESCO was held in April, 1978. On the recommendations of the symposium UNESCO/PGI formed the ad hoc group on the establishment of a Common Communication Format (CCF). The first edition of CCF was published in 1984 under the editorship of Peter Simmons and Alan Hopkins and its second edition was published in 1988 in two volumes called CCF/B and CCF/F. Several countries have adopted this standard for exchange and creation of bibliographic records at national level.

Structure of CCF

The structure of CCF is the implementation of ISO-2709. It consists of the following:

(a) *Record Labels:* Each CCF record begins with a fixed record label of 24 characters and consists of data element which contains the record. Each data element is identified by its relative character positioning the label.

(b) *Directory:* The directory is a table containing a variable number of 14 characters entries i.e. the length of each directory entry is of 14 characters terminated by a fixed separator character. Each directory entry corresponds to a specific variable. Data fields in the record are divided into four sub sections or parts, containing data for the following data element:

❖ Tab

❖ Length of the data field

❖ Starting character position

❖ Implementation defined section

(c) *Data Fields:* In the CCF a data field is defined as consisting of:

❖ Indicator

❖ *Sub Fields:* A sub field consists of a subfield identifier followed by a data string which is terminated by either another sub field identifier or a field separator.

❖ *Field Separator:* The field separator is that character which constitutes the final character of every data field except for the final data field in the record.

❖ *Record Separator:* The record separator is that character which makes the end of the final data field in the record and constitutes the final character of the record.

Limitation of the CCF

CCF is not designed to meet the requirement of all types of libraries and information organizations for local implementation. It is also not expected that institutes will use CCF record format for internal storage and processing purpose. The major limitations of CCF are:

● It is not sufficiently detailed in its definition and coverage of all data elements necessary for creating a bibliographical database for an individual library.

● It does not include its cataloguing rules nor does it align itself with any particular cataloguing code or set of rules oriented towards a specific or fixed type of information output form.

● Except for standard CCF fields CCF recommends the use of alphanumeric code for tags but it may not be possible to use alphanumeric code for tags in all cases (e.g. when library system uses CDS/ISIS, this recommendation cannot be implemented).

● Though in CCF further addition of the new data elements and their respective content designator is possible, the unrestricted interpolation by different users can create complication for exchanging data among libraries. In such cases, the content designators of newly added data elements are likely to vary which may cause inconvenience for exchanging data from one database to another.

5.2.4 Bibliographic Standards and the Internet

Since a large number of national bibliographies are being created using MARC format and even individual libraries have large collections of MARC Records, it was felt necessary in today's world of INTERNET and World Wide Web that the format should be redefined in order to link the digital objects from its bibliographic records. 111 orders to facilitate the better usage of MARC in the digital age, certain programs have been developed to perform the mappings of MARC 21 to other schemes, e.g., MARC 21 to SGML, MARC 21 to Dublin Core, etc.

MARC 21-SGML

SGML is a Standard Generalized Markup Language which is used as an international standard since 1989. SGML is not a single language but a language which describes other markup languages. SGML provides a standard syntax for defining the descriptions of the documents. These descriptions are called Document Type Definitions (DTDs). The mappings of MARC to SGML will allow the MARC records to be made available to SGML application programs that process the digital documents and allow for sending the MARC record in SGML with the document. A standard Document Type Definition (DTD) for MARC and a MARC-SGML conversion programs are available as freeware software at http://lcweb.loc.gov/rnarc/. The main purpose is to support the conversion of MARC into the SGML format and vice-versa. The ability to convert the bibliographic data from the SGML to MARC and vice-versa gave way to the development of WWW based catalogues, with SGML as its basic record structure.

MARC-Dublin Core

Dublin Core is an acronym or abbreviation used for Dublin Metadata Core. Element set is a core list of metadata elements used for describing the networked electronic information. A mapping of 15 elements of Dublin Core Metadata is set to MARC fields so that the conversion may occur. The Dublin Core is used for simple information resource description. The main aim of the Dublin Core was to formulate a set of instructions to the authors or the publishers publishing their information on the INTERNET without prior training.

Task   Critically examine the Standards which help in creating Bibliographic databases in Indian Academic Libraries.

Self Assessment

Fill in the blanks:

6. …………………… is a structure format for creating bibliographical records and for exchanging records between groups of information agency and libraries.

7. Most of the libraries are using the …………………… for assigning the Classification Number to the documents.

8. The …………………… formats are standards for the representation and communication of bibliographic and related information in machine-readable form.

9. The …………………… of most data elements is defined by standards outside the formats.

10. The …………………… contains the tag, starting location, and length of each field within the record.

5.3 Retrospective Conversion

The word "Retrospective" indicates that the process is only for already existing records, and the meaning of the word "Conversion" refers to the form and format of the records changing something from one form to another. Thus, retrospective conversion in library and information centre means "changing already existing catalogue from existing traditional form to a machine-readable form. Retrospective conversion, according to ALA Glossary of Library & Information Science, has been defined as the process of converting the database of library

holdings from non-machine-readable form to machine-readable form and that are not converted during day to day process. Harrod's Librarian's Glossary defines retrospective conversion (information retrieval) is a partial or complete conversion of an existing catalogue into machine-readable form as opposed to converting records created currently.

Retrospective conversion is the process of turning a library's existing paper catalogue record into a machine readable form. Retrospective conversion usually entails using catalogue cards (with a minimum of data like call number, author, title, ISBN and/or LCCN information) to find or create bibliographic record in a database of machine readable record such as OCLC (World Cat) and brining those records into the existing local database. Usually retrospective conversion is done to obtain the full MARC records on each item. A full MARC record contains valuable information such as summary information that can be key-worded and searched using the electronic catalogue. MARC records are a standard format that allows exchange of data between various sites or systems. The local database then allows electronic access to the catalogue and automated circulation using patron and item bar codes.

From the above definitions, it can be concluded that retrospective conversion is:

- conversion of bibliographical information of library holdings;

- from non-machine-readable form to machine-readable form; and

- those are not created during day to day process.

It can be accomplished in a number of ways, and the choice of the best method(s) for any library or information centre depends on the type and size of the collection, budget available, quality standards desired, time constraints, and staff, etc. Though essential and one time activity, it is a time consuming and costly undertaking for a library.

Did u know? In 1968, with the financial support of the council on library resources, the Library of Congress conducted a study by a task force for retrospective conversion of the library holding. It was known as Retrospective Conversion (RECON). The report of the task force was published in 1969. In August 1969, the RECON pilot project was initiated. The pilot project of RECON continued for two years and approximately 58,000 records were converted during the pilot project and the work is still continuing. The retrospective catalogue conversion made by the British Library is held in the BNB/LASER file. It was built up by the British National Bibliography (BNB) and the London and South Eastern Library Region (LASER).

5.3.1 Need and Objectives of Retrospective Conversion

The conversion of database of library holdings from non-machine-readable form to machine-readable form is a pre-requisite to implementing an automated system. This database would become the foundation for other library activities such as on-line public access catalogue (OPAC), circulation, catalogue maintenance, resource sharing, etc. These records provide the means of generating statistics and other information that is needed to improve the existing services and introduction of new one.

The objectives of retrospective conversion are:

- to create a database for the automation system

- to maximize access to the collection

- to improve the services

- reduction in time for searching of a document

- to improve library internal procedures: the integration of acquisition and cataloguing through automation and streamlining of other technical services

- to maximize returns on automation expenditure

5.3.2 Scope of Retrospective Conversion

To achieve the desired results it is necessary to have a good understanding of the relationship of each aspect of retrospective conversion process. Decision made on one part of the project will have an impact on others. Thus, once it is decided to initiate the retrospective conversion project, it is essential to determine the scope of the project by:

- stages/phases and schedule of process;

- deciding what areas of the collections will be converted;

- prioritizing the order of conversion;

- desired speed of conversion;

- by whom and how the conversion is to be completed; and

- project costing and budget.

It is better to ensure that everyone involved in retrospective conversion project should understand the scope, goals, and objectives of the project. Staff participation is most important non-cash input for the success of the project.

5.3.3 Planning of Retrospective Conversion

For successful retrospective conversion project, there is a need for sound and detailed plan tempered with realistic expectations. The plan should:

- clearly identify the objectives;

- carefully document procedures (paying close attention to efficient workflow);

- specify standards to be used;

- identify reporting requirements;

- identify the necessary staff training; and

- plan for regular monitoring of quality and schedule.

If in-house conversion is to be done, each staff member on the project must clearly understand his/her tasks and responsibilities, the proper sequence of activities, and the standards to be enforced. If the conversion is undertaken through a vendor, care must be taken to ensure that the contract has no loopholes, and that sufficient legal safeguards are included to protect the library in the event of serious difficulties with the vendor. In this regard libraries can prevent many problems by requiring progress check-points and periodic tests of the quality results. Retrospective Conversion is never easy. It can be done successfully, with minimal problems, if expectations are clearly understood at the outset, and if planning and documentation precedes the actual conversion. Once the project begins, success can be best assured through regular and frequent monitoring of progress and quality towards as per plan documents. The plan and schedule for the conversion project must take care of all the parameters of the conversion project. These parameters have multiple dependencies as follows:

- Budget = f (number of records, fields, quality, and rate)

- Quality = f (manpower quality, supervision, and planning)

- Manpower = f (number of records and speed)

- Manpower Quality = f (wages and training)

- Supervision = f (quality and speed)

- Speed = f (manpower, quality, number of fields)

- Period = f (number of records, fields, speed)

If anyone of these variables is changed it may affect several others. It implies that a single variable cannot be changed with affecting the related parameters. The above variables mean:

- *Budget:* Total budget of the conversion project.

- *Quality:* Standards and freedom from errors of records on OPAC.

- *Manpower:* Number of persons working on the conversion project.

5.3.4 Problem in Retrospective Conversion

Retrospective conversion solves the problem of entering the data on each item in the library into a computer system. But though it has many advantages, it has also some limitations. Some of the disadvantages are mentioned below:

- Lack of standardization among the national MARC format in assigning content designators to elements of information in the machine readable record.

- Diverse functions of bibliographic agencies.

- Lack of an internationally accepted cataloguing code for machine readable cataloguing record.

- Lack of agreement among different bibliographical communities in organizing data contents in machine readable record.

- Lack of agreement as to the function of content designators.

- Lack of money by a small library creates problem in retrospective conversion.

- Lack of expertise required to meet the standard for retrospective conversion.

- Retrospective conversion always demands standardization of bibliographic content and machine format.

- Incomplete or incorrect bibliographic information makes it impossible to match the shelf list cards with the correct MARC records. The result is the addition of an incorrect record to the database or the need to return the title to you for additional information.

Today, the computers have entered each and every area of a library. The library automation is the application of modern technologies including the application of computer hardware and software, different storage medias, telecommunications, etc. which help the mechanization of any activity in the library. To implement the computer in the library, the selection of proper hardware and software forms an essential part. If proper software is selected, it will automatically generate or create OPAC which will replace the traditional card catalogue of the library. The feature-rich software will also have the provision of retrospective conversion. It will help the library to enter minimum of details about the document in their collection in the database of some other libraries and will help in getting the full bibliographic record of the document that can be embedded in the local database.

There are different software packages available for different activities of a library. Sometime they are bundled together with lots of cool features to form integrated library management software.

The open source software is gaining importance day by day. They provide a free licence with the additional facility of extensive customization to meet the local need. In case of commercial proprietary library management software SOUL 2.0 and LibSys 7 are popular in India. In case of free proprietary software, the E-Granthalaya of NIC is gaining importance and in case of Open Source software, Koha is day by day heading to win the race.

Example: In case of Institutional Repository Software Packages, the Green Stone Digital Library software (GSDL), EPrints, and Dspace are deployed in different institutions in India. In the category of Content Management System (CMC), Drupal, Joomla, and MediaWiki is used whereas from the category of Learning Management System (LMS), Moodle are favouring by large number of institutes.

Self Assessment

State whether the following statements are true or false:

11. Retrospective conversion is the process of turning a library's existing paper catalogue record into a machine readable form.

12. MARC records are a standard format that does not allow exchange of data between various sites or systems.

13. In August 1979, the RECON pilot project was initiated.

14. Staff participation is most important non-cash input for the success of the project.

15. Retrospective conversion does not solve the problem of entering the data on each item in the library into a computer system.

Case Study

Retrospective Conversion of Ancient Knowledge, Issues and Challenges "A Case Study of Central Library, Banaras Hindu University, India"

Indian civilization is one of the world's oldest and most developed civilizations, i.e., the Indus civilization. India's culture is marked by a high degree of syncretism and cultural pluralism. The diversity inherent in Indian society makes it unique. Indian culture reflects the influence of geography, with a long history of foreign invasions and rule, to which India reacted patiently and created a space for the new customs, traditions, and ideas within their own established traditions. Earlier, the literary tradition was mostly oral and was passed from generation to generation. Later, written transcription was adopted to ensure longevity and wider dissemination of information. Materials such as birch bark, palm leaves, cloth, wood, and handmade papers were used to store the precious knowledge belonging to different areas of the arts, science, social science, etc.

Everyone is directly or indirectly influenced by their society, which, in turn, is reflected in its literature. Thus, these old scriptures symbolize the social and cultural life of any era. Manuscripts mirror our past. The historical and social change is reflected in the different styles and forms of writing over the centuries. Writing as a craft and writing as a communication skill are inseparable in Indian cultural development. India has the largest and most varied collection of manuscripts in the world. But due to lack of awareness, a

vast amount of literature is already lost and the rest available is mostly in a state of decay. There was no effort to document, preserve, or even explore these rare manuscripts lying within personal possession.

The content and style of manuscripts echo the changing concerns of society. They are required to be documented, preserved, and made accessible to the present and succeeding generations to reinstate the glorious past. National Mission for Manuscripts is an initiative of the Government of India. The project has helped organizations like Banaras Hindu University to preserve their rare and precious collection of manuscripts and make it available to users.

History of the Sayaji Rao Gaekwad Library, Banaras Hindu University (BHU)

The library was established in 1916 in Telang Hall of Central Hindu College. Initially, it had a small collection which was donated by the son of Justice K. T. Telang, Prof. K. P. Telang. The library was nurtured by the eminent historian Sir Jadunath Sarkar. The library was moved into Central Hall of BHU Faculty of Arts in 1921. In 1926, Sir Sayaji Rao Gaekwad made a generous donation of ₹ 2 lakh (200,000) to establish an independent building for the library. In 1941, the construction of the building was completed and library was established. The architecture of the library followed the archetype of British Museum Library. The present collection of manuscripts in Sayaji Rao Gaekwad Library (also known as Central Library) BHU has been built over a period of time by the generous donations from scholars and their families. These donations helped the library to enrich their collection with many invaluable manuscripts and rare documents. Earlier, these manuscripts were kept under lock and key because of the fear of irreparable damage. The access was restricted to research scholars and eminent personalities. In 2003–04, the manuscript collection of the library was opened to the public. The driving force was the IXth five year plan (1997–2002) of the Government of India in which set a high priority on conservation and preservation of manuscripts and rare documents (9th Five Year Plan, Vol. 2.) This was aided by the efforts of the National Mission for Manuscripts. Better preservation technologies have helped gain the trust of authorities on this issue.

National Mission for Manuscripts (NMM) of India

NNM is an ambitious project launched in February 2003 by the Ministry of Culture, Government of India, under the 9th Five-year plan (1997–2002). It was an effort to save national heritage through documentation and representation in different forms and provide more visibility to ensure wider cultural inheritance (National Mission for Manuscripts, 2005). The mission operates in different states of the country through a network of specifically identified Manuscript Resource Centres (MRCs), Manuscript Partner Centres (MPCs), and Manuscript Conservation Centres (MCCs). These centres work with the objective of collecting data on manuscripts located in different places, from universities and libraries to temples, mathas, madrasas, monasteries, and private collections. An MRC does the job of documenting its own collection and conduct surveys for collections in and around areas/districts. MPCs mainly look after the documentation of their own collections. MCCs look after conservation of manuscripts. The Mission provides assistance for infrastructure for conservation and preservation of manuscripts. It organizes training programs and supports research for better management and wider dissemination of manuscripts.

Manuscript Collection at BHU

BHU has a vast collection of manuscripts and rare documents.

1. *Literature on Kashmir Shaiv Darshan:* More than 100 small and large works of literature are available, all rare and many unpublished.

2. *Manuscripts Written on Birch Bark:* The large and magnificent manuscripts written on birch bark are hardly available anywhere except Kashmir.

3. *Illustrated Volumes of Bhagwad Gita:* The beautiful handwritten and illustrated manuscripts leave an unforgettable image of the scripture for any scholar. They are a beautiful combination of gold and handmade colours.

Presently, manuscripts reside in glass-doored steel almirahs. Unbound manuscripts are kept between handmade acid-free hard boards and wrapped in red cotton cloth (red is thought to be an insect repellent). The section is air-conditioned to maintain proper temperature and humidity. Within the section, a fire protection system has been installed. Manuscripts have been arranged according to language and script.

Relationship between BHU and NMM

Varanasi is one of the oldest cities in the world. It is recognized as a study centre for Indian philosophy and culture. Most of the manuscripts available at BHU have been in continuous demand by indigenous as well as foreign scholars. Most manuscripts in the collection are brittle and regular use of collection would have caused the condition of the manuscripts to deteriorate even more. The university was put in the position of deciding between the ethics of providing assistance to researchers and the responsibility of preserving its rich heritage. A more organized approach was required for the wider use of manuscripts without damage. Eventually, the university decided to become a part of the NMM. The Mission also showed a keen interest, because they were looking for a strong base in the Eastern part of Uttar Pradesh, a state of Indian Republic, which could comply and contribute towards achieving NMM objectives. Thus, on the 6th of February 2006, the first Memorandum of Understanding (MoU) was signed between Central Library, BHU, and National Mission for Manuscripts, Ministry of culture, Government of India, which recognized Central Library, BHU as a Manuscript Partner Centre (MPC) of NMM.

As MPC, BHU was vested with the responsibility of documenting its collection of manuscripts and sharing its database to enrich the database of NMM. Further, on 23rd November 2006, Central Library, BHU was recognized as Manuscript Conservation Centre (MCC) by NMM. Key features of the scope area defined for Central Library, BHU as MCC by NMM are: Preservation and curative conservation of manuscripts in selected districts of eastern UP, i.e., Ghazipur, Jaunpur, Chandauli, Azamgarh, Sultanpur, and Varanasi. Training for development of specialized manpower in handling of manuscripts. The training had emphasis on indigenous as well as on advanced technologies for the conservation and preservation of manuscripts. A general emphasis was also given to pursuing other efforts which fall under the purview of the mission statement.

Under the project "Commissioning Tasks Pertaining to Preservation and Conservation of Manuscripts by MCC for NMM", BHU initiated the task of digitizing its manuscript collection. The digitization was carried out in two phases under the Xth five-year plan of the library. Virtually all manuscripts of Central Library, BHU have been digitized.

Phase I

Nearly 500 manuscripts were digitized in the first phase. The project was carried out as a pilot project and its successful completion and implementation laid the foundation for the next phase.

Phase II

More than 7,000 manuscripts have been digitized in the second phase. These manuscripts were digitized per the standards and norms set by NMM. The library now has two kind of

Contd...

digitized data for manuscripts, raw and processed. Raw data is unprocessed data stored in .tiff format. When the quality of raw data is enhanced to make it more legible, becomes processed data. The processed data is stored in .jpeg format and the files are smaller than the raw, unprocessed image. A copy of raw data is maintained for reference in case of information loss from processed data at the time of editing. Eleven million pages are now electronically accessible within the program.

Workshops and Seminars

To gather and share knowledge on safeguarding manuscripts and rare documents, a national seminar on Digital Preservation of Manuscripts and Rare materials was organized in 2005 by Central Library, BHU. The seminar was focused on tools and techniques, indigenous as well as technological, for the preservation and conservation of manuscripts. A national workshop on manuscriptology and palaeography was organized by the Central Library, BHU in cooperation with NMM. Experts on different scripts imparted their expertise to personnel from different institutions as well as students and research scholars, to help them learn the fundamentals of different scripts and languages. Many of the languages and scripts in which manuscripts were written are dying, and this workshop was crucial in creating awareness. In addition to this basic course, there are plans to conduct an advanced course to build a national pool of people who can effectively contribute in conservation and wider dissemination of the thought content stored in manuscripts. This is one of the major objectives of NMM.

Bibliographic Database of Manuscripts

A scholar coming to the library does not have a clear idea about the manuscript collections there. Time is wasted in searching for manuscripts. A bibliographic database of manuscripts and rare documents available in the region should be developed. This will help locate manuscripts as well as providing more visibility for them. One of the NMM's primary goals is creating an electronic database of manuscripts that will contain titles, themes, authors, commentaries, scripts, languages, conservation status, and much more.

Storing and Managing Digitized Data

After digitization is complete, the data must be archived. Raw and processed data is currently stored on hard drives and compact discs. The number of CD-ROMs is nearly 10,000, which is nearly 7 TB of data. Managing such a huge amount of data has become a problem for the MCC. There is a proposal to buy a high-end storage server and also a digital library solution, to provide access to digitized manuscript data on the internal network. Better storage and access for the compact discs is also being pursued.

Since the inception of human civilization, India has been a centre of learning for religion, philosophy, and science. Manuscripts contain writings from eminent scholars. These writings are available on materials such as cloth, birch bark, leaves, clay, etc. They cannot survive without proper handling and care. Central Library, BHU has a large collection of manuscripts that are in regular demand by scholars in different disciplines. This leads to regular consultation of these rare classics which cause their condition to further deteriorate. Efforts are being made to preserve the collection. Simultaneously, conservation of documents is also being done to keep the body and content of the scripture intact. The collaboration of NMM and BHU has advanced efforts in the eastern UP of India in protecting old manuscripts. The collaboration also promises a more intense coordination between the scientific community and manuscriptologists, to bring forth better technological tools and techniques to decipher, search, and retrieve the knowledge stored in these rare scriptures. Last but not least, these efforts help inculcate a sense of responsibility in society toward our rich past.

Notes

Source: http://www.webpages.uidaho.edu/~mbolin/chetansharma.pdf

5.4 Summary

● A library planning to automate should undertake a process by which representative staff and users can identify service needs and objectives.

● Computer technology and software applications are changing and evolving at an incredibly rapid pace.

● Plans must be regularly revisited and updated as the environment and needs change.

● Standards are documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose.

● The MARC 21 formats are standards for the representation and communication of bibliographic and related information in machine-readable form.

● A MARC 21 format is a set of codes and content designators defined for encoding machine-readable records.

● The MARC 21 formats were designed to facilitate the exchange of bibliographic and related information.

● UNIMARC is an international standard maintained by the International Federation of Library Association and Institutions (IFLA) to facilitate the international exchange of data in machine-readable form between national bibliographic agencies.

● CCF is a structure format for creating bibliographical records and for exchanging records between groups of information agency and libraries.

● Retrospective conversion usually entails using catalogue cards (with a minimum of data like call number, author, title, ISBN and/or LCCN information) to find or create bibliographic record in a database of machine readable record such as OCLC (World Cat) and brining those records into the existing local database.

5.5 Keywords

Agreements: A negotiated and usually legally enforceable understanding between two or more legally competent parties.

Common Communication Format (CCF): CCF is a structure format for creating bibliographical records and for exchanging records between groups of information agency and libraries.

Dewey Decimal Classification (DDC): The Dewey Decimal Classification is a system of library classification made up of ten classes, each divided into ten divisions, each having ten sections.

Directory: A directory or folder is nothing more than a location on a disk used for storing information about files.

Format: A format is a pre-established layout for data.

Guidelines: Recommended practice that allows some discretion or leeway in its interpretation, implementation, or use.

Planning: The process of setting goals, developing strategies, and outlining tasks and schedules to accomplish the goals.

Record Labels: A record label is a brand and a trademark associated with the marketing of music recordings and music videos.

Retrospective Conversion: Retrospective conversion is the process of turning a library's existing paper catalogue record into a machine readable form.

Standard Generalized Markup Language (SGML): SGML is a standard for how to specify a document markup language or tag set.

Standards: Concept, norm, or principle established by agreement, authority, or custom, and used generally as an example or model to compare or measure the quality or performance of a practice or procedure.

Universal MARC Format (UNIMARC): UNIMARC is an international standard maintained by the International Federation of Library Association and Institutions (IFLA) to facilitate the international exchange of data in machine-readable form between national bibliographic agencies.

5.6 Review Questions

1. "Planners need to be aware that there is certain cost elements involved in the installation and operation of any automated system." Elucidate.

2. What is planning for library automation?

3. Discuss the basic steps involved in library planning process.

4. Explain standard in the field of library and information science.

5. Highlight the three elements involved in MARC.

6. What are the five types of data which are defined in formats?

7. Describe the three main sections in MARC record.

8. Write brief note on UNIMARC.

9. Explain the structure and limitations of CCF.

10. Define Retrospective conversion.

11. Highlight the need and objectives of Retrospective Conversion.

12. Examine the problems in Retrospective Conversion.

Answers: Self Assessment

1.	True	2.	True
3.	False	4.	True
5.	False	6.	CCF
7.	Dewey Decimal Classification (DDC)	8.	MARC 21
9.	Content	10.	Directory
11.	True	12.	False
13.	False	14.	True
15.	False		

5.7 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

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Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Online links

http://carbon.sirsidynix.com/Helps/3.4/Workflows/English/FAQ_UNIMARC_Format.html

http://ir.inflibnet.ac.in/bitstream/handle/1944/327/04cali_19.pdf?sequence=1

http://library.iias.ac.in/dspace/bitstream/handle/123456789/11/04Planner_11.pdf?sequence=1

http://web.simmons.edu/~chen/nit/NIT'96/96-065-Cohn.html

http://www.loc.gov/marc/96principl.html

http://www.netugc.com/common-communication-format-ccf

http://www.netugc.com/retrospective-conversion

http://www.unimarc.net/unimarc-formats.html

Unit 6: Library Automation in Acquisition

Objectives

After studying this unit, you will be able to:

● Discuss the meaning of Acquisition

● Explain the Acquisition Department

● Describe the document selection

● Discuss the non-book materials

● Explain the records and registers

Introduction

Information sources building, an important function of the library should be based on sound policies and programmes. It involves a series of operations performed according to systemic

Notes procedures. Building a collection of documents and kindred materials is a major and important function of a library. In the earlier units, you have been exposed to some of the theoretical aspects of collection building, such as principles of book selection, different types of documents and selection tools that aid the process of selection, leading to a broad policy of book selection. In this unit, you would learn the practical operations involved in the actual acquisition of the various types of documents for the library.

The task of building up a collection of documents is entrusted to the acquisition section of a library, which functions on the basis of the aims and objectives of the library and is in tune with the general scope of the activities and services of the library. Acquisition work consists of a series of operations, involving a number of routine jobs which have to be systematically planned and operated.

6.1 Meaning of Acquisition

Acquisition of documents is one of the basic functions associated with any library. A library must acquire and provide all the relevant documents to its users within its budgetary limitations. An acquisition subsystem performs four basic operations. They are selection, ordering, receiving and accessioning of documents. Let us try and understand as to how these operations are performed in a library.

Ever since the Acquisition feature was incorporated into library systems, it has contributed to savings of time and cost as well as labour. Most acquisition transactions such as ordering and payment can be done electronically. It not only helps to reduce the amount of paper needed for purchase orders and invoices, it also helps to facilitate filing and organising of forms in electronic format, another time saving feature.

Notes Most libraries now expect to have a fully integrated acquisition module, which includes pre-order searching, ordering, claiming, and cancellation of orders, receipt processing, payment, routing, fund accounting, vendor accounting, currency control and statistics report compilation.

With the emergence of new storage and entertainment media such as CD-ROM, CD, VCD and DVD, libraries need their acquisition features to accommodate these new formats as well as printed publications. Managing fund accounts is the most crucial and sensitive function of an acquisition. Most libraries are non-profit organisations and most of their funds come from either the government or the private sector or the general public. So they must manage their finances carefully. Because of this, security issues have to be imposed to the system but at the same time enable authorised librarians to create, update and close an account at any time, add or remove amounts to or from the allocation at any time and permit freezing of funds with override capabilities. The system must also calculate the average annual cost for categories of materials by type, fund and subject heading. There are numerous ways for libraries to acquire materials necessitating many types of orders.

Caution It is not possible for the system to generate all order types, but it must at least accommodate the followings: Firm order, prepayment, and gift, and exchange, membership, on approval, blanket order, standing order and subscription based.

When it comes to receiving materials, the system must be capable of accepting credits, refunds and partial order payments and provide real time update of vendor and account records. But what if items are not received? The system must be able to produce claim notices and send the claims electronically to vendors, or to the librarian. The librarian should be able to cancel and resubmit orders without re-inputting record data.

Acquisition reports are needed to document performance statistics and summaries of work done during the acquisition process in a specified time frame. In the past, they were compiled manually, a tedious job. Nowadays library systems come with a graphical report interface that enables point and click selection of appropriate date elements, time periods, frequencies, output devices etc.

Acquisition and ordering systems in libraries cover the selection, ordering and accessioning of items into the library's collection. Computers are used:

- to send order slips and 'chasers' for unacknowledged or overdue orders to the booksellers.

- to produce lists of books on order

- to keep accounts of money spent

- to produce accession lists of recently acquired books

The detailed input to an acquisition system covers

- new orders

- amendments to existing orders

- bookseller's reports

- acknowledgement of receipt of items in the library

Selection of new books can be done from commercially available services which disseminate information about forthcoming documents, or directly from MARC tapes or any local inputs.

Two files are maintained in a computer-based acquisition system. One is the main file containing records of all current orders. The second is a file with the names and addresses of booksellers used by the library. A code number for each bookseller links the two files, so that booksellers' information is not repeated in the order file. The system prints out the orders addressing the appropriate supplier printing of orders can also be done on special pre-printed stationery that can be sent directly to the book-seller.

By checking with the date of entering the order record into the file; 'chasers' can be sent to the booksellers, if no information regarding the order has been received within a predetermined time. When the item is received in the library, the order record with the bibliographic details becomes the basis of the catalogue record. The edited record is merely added to the catalogue file in an integrated system.

Other processes that can be performed by a computerized acquisition system are:

- listing items on order, by author, department or subject;

- new accessions listing;

- notifying individuals who have recommended a particular book, about the receipt of that book;

- control of accounts;

- production of relevant statistics to help management decisions.

The main objective of automated acquisition system is as follow.

- To reduce lab our and paper incentive work involved in manual acquisition.

- To maintain up to date information or record of all activities involved in acquisition.

- To have effective and efficient control over ordering, claiming and cancellation functions.

- To provide accurate and timely financial information.

- To provide necessary management information reports, whenever they are required.

Through this module library staff can search the entire database of library holdings for the purpose of duplicate checking etc. Using various combinations, number of reports could be generated.

Self Assessment

State whether the following statements are true or false:

1. Most acquisition transactions such as ordering and payment can be done electronically.

2. Four files are maintained in a computer-based acquisition system.

3. A code number for each bookseller links the three files, so that booksellers' information is repeated in the order file.

6.2 Acquisition Department

Automation of vendor files and integrated library systems are changing (a) the process of collection development, (b) the role of the collection developer, (c) the relationship between libraries and vendors, and even (d) the library's organization. By combining files in the bibliographer's workstation, paraprofessional staff can select the core collection; professionals will focus on expensive or fringe titles. Programmed or mechanical selection can replace staff decisions in acquiring the core titles. Automation may increase successful cooperative collection development and expand the responsibilities of collection developers. Professional roles will change to include more policy, preservation, evaluation, and process assignments. Collection development activities may be decentralized and combined with reference and cataloguing subject groups or become part of acquisitions processing teams.

Libraries are organised into units/departments/sections based on the functions that they are expected to perform. Acquisition Department is one among them and is concerned with various activities relating to collection development. Its objective is to build up information resources in conformity with the objectives of the parent institution on the one hand, and that which is suitable to the differential information requirements of the different users on the other. It involves the processes of selection, procurement and accessioning of documents.

Acquisition work comprises three distinct functions, viz., selection, procurement and accessioning. The first two functions pose a number of problems in planning and organising the work of the acquisition department. In the actual operation of these different functions, a number of records, registers, and files have to be designed, created, maintained and handled. These are all explained with reference to the functions they perform. All these routine functions can be computerised.

The requirements of selection and acquisition are given below:

- *Selection:* A Selection Policy (involving a statement about users and needs; subject, topic or mission to be dealt with and type of information sources to be covered). Selection Aids

and Tools which will help in selection and verification. Specification of a Selection Process (involving decisions on who selects; procedures for judging intrinsic value of information in sources and procedures for judging demand and user appropriateness).

● *Acquisition/Procurement:* Procedures for procurement of necessary information sources. In cases where no outright procurement is planned or possible procedures for access to sources.

Example: Getting on loan, photocopying pertinent sections, getting permission to use them in another information centre/system, etc., have to be set.

● *Accessioning:* Specification of procedures for taking all the books and documents acquired to be added to the stock of the library which involves the assignment of a serial number called Accession Number and, if applicable, a Donation Number. Every item and its bibliographic details thus, entered in the Accession Register.

Thus, these three successive stages of operations – selection; procurement and accessioning – correspond to the three sections of the Acquisition Department.

The collection of a library can contain various types of documents. Some libraries may have a special preference for specific types of documents. However, in most libraries books form the major part of the collection. It is, therefore, usual to refer to the activities in AD as book selection, book ordering and book accessioning respectively.

Notes It may be noted that acquisition of all types of documents comes within the scope of AD.

However, there is one exception. Acquiring current issues of periodicals and newspapers is not done by AD. Instead it is done by the Periodicals Department. AD has to deal with periodicals and newspapers only when they are received as bound volumes. AD has a very crucial place in the overall organisation of a library. Its importance lies in the fact that collection is the basic factor in the usefulness of a library and that collection development is primarily the task of this department. AD, therefore, must organise tile resources made available to it (men, materials and money) in such a way as to facilitate the building lip of the collection in the most efficient and economical way. The fulfilment of this task involves all the basic elements and sound principles of scientific management.

Task State the six factors that govern the acquisition for documents in a library.

Self Assessment

Fill in the blanks:

4. …………………… roles will change to include more policy, preservation, evaluation, and process assignments.

5. The collection of a library can contain various types of …………………..

6. …………………… has to deal with periodicals and newspapers only when they are received as bound volumes.

6.3 Document Selection

Document selection is the first phase. There are two aspects in document selection, namely, planning and procedure.

6.3.1 Planning

Planning here relates to the various preparations and arrangements you have to make to carry out the procedure efficiently. Book selection is conditioned by three factors: demand, supply and finance. Planning, therefore, must be mainly concerned with these factors. Demand and supply must be known, and finance secured. Further; men and materials required for the work need to be arranged. Echoing similar views, Ranganathan suggest that the distinctive work of Document Selection is to be planned with reference' to the following four factors: Sources, Selection, Indent and Finance. We shall examine below these aspects of planning under four heads, namely

- Ascertaining demand

- Finding resources

- Allocating funds

- Arranging personnel

Ascertaining Demand

Since demand is a basic factor in selection you have to develop a system for ascertaining the demand- Demand includes both expressed wants and unexpressed wants and unexpressed needs of readers. Similarly, needs of both actual and potential readers should be taken into account.

Perhaps, the following sources can be made use of in ascertaining demand:

- statistics relating to books circulated from, and consulted in the library;

- suggestions from library staff working in the service departments;

- suggestions from readers;

- indents from subject experts or departments;

- findings of user need survey conducted;

- syllabi and prospectuses of courses of studies; and

- profiles of researchers.

Demands have to be assessed in terms of their volume, value and variety. The final rating of the demand should COMIM with the selection policy of the library. Each library ought to have its own broad selection policy. Some libraries even have a written statement of this policy. In either case, the policy is the basic guideline in selection of documents.

Finding Resources

As said earlier, supply is another basic factor. Supply means availability of documents for acquisition. Information regarding supply can be collected in the form of various selection sources or tools. The library will be regularly receiving various source materials. If not, they have to be acquired. A good source collection may contain the following:

- Trade catalogues issued by individual publishers and booksellers

- Book trade journals

- Previews and announcements issued by publishers

- Book reviews appearing in newspapers and journals

- Book reviewing journals

- Book selection lists brought out by competent bodies

- List of textbooks prescribed for various courses of studies

- Published catalogues of book exhibitions

- Published catalogues of important libraries

- Subject bibliographies and subject guides to selection

- National bibliographies

- Comprehensive retrospective bibliographies like Books in Print

- Catalogues of second-hand booksellers

The sources have to be sorted and stored for convenient use. Updating of the sources and weeding out of old ones should be done on a regular basis.

Allocating Funds

Finance is the most important factor in document selection. Proper planning of finance is basic to good acquisition work. Every library works according to its budget. The total budget of the library will include a separate provision for books. This amount will have to be apportioned among three heads, namely books, periodicals, and binding. This amount thus set apart for books is the budget placed at the disposal of the Acquisition Department. This amount has to be used for purchase of books and other types of documents except current periodicals. For the balanced development of the collection, the books budget should be allocated among different subjects and categories. This budget allocation is done by the library authority or its delegated body like the Book Selection Committee. The librarian and the acquisition staff are also involved in this process since they are the people to provide the information required for budget allocation to the authorities. Such information may relate to an actual and the potential needs of the clientele, the current and future programmes of the parent institutions, the strength and weakness of the existing collection, the price range of publications in particular subjects, etc. These and other types of information can also be used by the library to obtain enhanced budget provisions. However, once the allocation is finalised, acquisition work has to conform to the financial discipline dictated by it.

Arranging Personnel

Planning for document selection should also cover the personnel or human factor. The people involved in the selection process are the librarian, the acquisition staff, the subject experts and the library authority or selection committee. The ultimate responsibility for book selection rests with the librarian. The acquisition staffs are there to help him. But, neither the librarian nor his staffs are experts in all the different subjects. Therefore, it becomes necessary to take help from subject specialists. The selection committee may or may not be composed of subject experts. Nevertheless, committee level decisions have the advantage of being more democratic and participatory. You must remember that document selection is not a one man job. It should be the outcome of good team work. Therefore, you must be very prudent in choosing the members of this team. This applies to both the acquisition staff and the subject experts. You need to maintain

a panel of subject experts who will be willing to participate in the selection process by giving objective opinions and advice.

6.3.2 Job Analysis

The work of Document Selection consists of the following items:

Sources

- Sources for acquiring work
- Sources for arranging work

Selection

- Document Selection work
- Document Selection carding work
- Document Selection consultation work

Indents

- Indents scrutinising work
- Indents passing work

Finance

- Allotment work
- Allotment watching work

In turn, each of the items consists of jobs which may be hourly, daily, weekly, fortnightly, monthly, etc. Details regarding each of the jobs are dealt with in Ranganathan's magnum opus Library Administration. It would be interesting to note that he has not only given a Table of Correlation showing the jobs that bring the document selection section into contact with other sections, but also has given an Illustrative Time Scheme for the different jobs.

6.3.3 Procedure

The actual process of document selection may be initiated in different ways. The acquisition staff takes note of the desirable items and presents them to the subject experts for approval. Alternatively the subject experts themselves or the subject departments may make indents for items they recommend. In both instances, the acquisition staffs are responsible for the routine jobs connected with selection. It is their duty to collect, complete and correct information on the documents. So also it is their risk to allow all unnecessary and unintentional duplications. Therefore, adequate care should be taken to ensure that the items selected are not already available in the library. An acceptable selection procedure can be outlined as follows:

1. *Scanning:* All the currently received sources should be scanned regularly. Old sources should be scanned only for specific needs. Items found desirable may be ticked off in the sources: Your knowledge about the existing collection and about the items already selected or ordered will help you in avoiding duplication at this stage. If necessary, the marked items may be forwarded to the librarian and his concurrence obtained.

2. *Scrutiny:* The purpose of scrutiny is to rule out the possibilities of unnecessary duplication. This is done by checking the marked items with the following:

   ❖ items selected earlier, by checking the "Books Selected" card tray;

   ❖ items ordered already, by checking the "Books-on-Order" card tray;

   ❖ items already received, by checking the "Books Received" card tray and the "Book-in-Process" card tray;

   ❖ items available in the library, by checking the catalogue.

Did u know? Only such items which are cleared after the above scrutiny are retained with tick marks. Others are scored out. Now you have completed the provisional selection stage.

3. *Recording:* The purpose of recording is to make complete data available on each of the provisionally selected documents. The unit record can be a standardised selection card of the size 5" x 3" with appropriate columns printed. The following are the essential data elements to be covered by a selection card:

   ❖ Broad subject name or class number.

   ❖ Full names(s) of author(s).

   ❖ Full title with sub-title, if any.

   ❖ Edition number, if any.

   ❖ Imprint (place, publisher & year).

   ❖ Series name, if any.

   ❖ Collation, like number of pages, type of binding, etc., and size.

   ❖ ISBN, if any.

   ❖ Price.

There are also some desirable elements, to be included, like

   ❖ Reference to source/indent/suggestion

   ❖ Name of the subject expert granting approval

   ❖ Order number and date

   ❖ Name of the vendor with whom ordered

   ❖ Number of copies ordered

   ❖ Date of supply

   ❖ Bill number and date

   ❖ Date of payment

   ❖ Amount paid

   ❖ Accession number

All the essential information may not be found initially. You will have to use appropriate bibliographical tools and complete the columns in the selection card as far as possible.

The desirable information listed above is provided for in the cards since they would explain the workflow regarding each item.

1. *Consulting:* Consulting work can be done at prescribed intervals or as and when needed for placing an urgent order. For this purpose, subject lists are typed out from the cards in the "Books Selected" tray. Each list should be forwarded to the concerned subject expert with the request that he should return the list after considering every item and making his specific recommendation as to whether "approved", "rejected" or "deferred". Once the list is received back from the expert, you must carry forward the recommendations to the respective cards. Cards relating to the "rejected" items must first of all be removed and disposed of Cards of the "approved" items must be duly noted and removed to another tray labelled as "Books Approved". Cards belonging to the "deferred" items may be separately kept in another tray labelled as "Books Deferred". These items can be presented again to the experts whenever it becomes necessary.

2. *Indents Passing:* As and when indents are received from experts or departments they must be subjected to the same process of scrutiny. Items found already available in the library or on order should be scored out unless additional copies are recommended. Clarification on this point can be sought from the indentor.

    After scrutiny, the indent has to be costed. For this, the price of each item should be ascertained from proper sources and the total value involved estimated. The indentor should then be informed of the financial position through an Indent Noting Form. The following details should be included in the Indent Noting Form:

    ❖   Number of items recommended

    ❖   Number of items already available or on order

    ❖   Number of items recommended for additional copies

    ❖   Estimated cost of items neither available nor on order

    ❖   Estimated cost of items to be duplicated

    ❖   Total estimated cost

    ❖   Total allotment for the subject/department

    ❖   Amount already appropriated

    ❖   Balance amount available

    ❖   Remarks, if any

    ⚠

    Caution In the light of the above financial report, the indentor would be making suitable adjustments in the items intended or reconfirm the indent. In either case, your next job is recording the items and merging the cards in the "Books Approved" tray.

3. *Sanction Obtaining:* Book selection becomes final only when the formal sanction is obtained from the librarian or any other sanctioning authority. For this purpose, separate lists have to be typed out from subjects or categories of documents as per the classification in the budget allocation. Necessary financial report also should be prepared to accompany the lists, including the total estimated cost, total allotment in each case, amount already appropriated, and balance budget available. Sanction is obtained for each list. If any alteration or deletion is made in the list the same should be entered 'in the respective cards also.

Self Assessment

State whether the following statements are true or false:

7.   Book selection is conditioned by six factors.

8.   Proper planning of finance is basic to good acquisition work.

9.   Old sources should be scanned only for specific needs.

6.4 Non-Book Materials

The term "non-book materials" (NBM) includes four categories of information sources drawn from the second edition of the Anglo-American Cataloguing Rules (AACR), namely:

●   sound recordings;

●   video recordings, including interactive video discs;

●   graphic materials-photographs, illustrations, postcards and slides;

●   micro-computer software, including CD-ROM.

In addition, other forms covered by the term NBM are microforms-microfilms, microfiche, etc., models, wallcharts, etc. As a matter of fact, microform dates back to the year 1839 when John Benjamin Dancer, an optician and professional photographer, produced the first micro-photograph. These microforms, perhaps, offer an alternative to book storage and help in solving the space problems encountered by libraries.

Commenting on the value of NBM, it was said by Leslie Gillert and Jan Wright as early as 1971 that "NBM have increased the range and means of obtaining and exploiting information for teaching, learning and research purposes, but to separate books from NBM is to divide information into false compartments. Hence, it is essential that books and non-books can be jointly identified and located to meet particular needs".

In spite of this recognition, NBM have not become popular in libraries due to the following reasons:

●   A lack of understanding or only recent concern with the learning processes by university academics.

●   The strong belief in the primacy of the printed word for research collections.

●   Little demand from users, who, perhaps, were dominated by the conventional information resources and with little exposure or access to NBM.

●   Lack of motivation and funds to build up NBM collections, etc.

6.4.1 Acquisition of NBM

Once it is decided that NBM will form a part of the collection of the library, efforts should be made by the librarian to make a planned selection of NBM that would satisfy the differential requirements of all the clients. But, it is not an easy task due to some aspects that are peculiar to NBM. Hence, the librarian should acquire the necessary expertise – i.e., knowledge and skill for identifying various sources of supply and a familiarity with problems hampering acquisition of NBM.

Notes   While the general procedure for selection and procurement of books would be applicable to non-book materials also, it must be remembered that since the physical attributes, production and publishing of NBM are different, appropriate modifications should be effected in their acquisition. Unlike books which can be procured through local vendors, NBM producers distribute their own material and consequently there is no equivalent to the book shops in the NBM field. Further, since NBM are fragile, the publishers insist on the library paying for any material which is damaged during preview. In addition, NBM are not available on approval like books due to:

- their fragile nature; and

- perhaps, more important, due to the dishonesty of some librarians who copy the material and return the original.

Another problem in NBM acquisition is the lack of bibliographic control which makes it difficult to the librarian to identify NBM available in the production and distribution agencies. Bibliographic tools for NBM are, perhaps, conspicuous by their absence, or, if they are present, they are very few in number. In other words, there does not seem to be any coherent bibliographic system for NBM. These are merely hundreds of separate publishers' catalogues and lists. Therefore, it may be crucial for librarians wanting to build a NBM collection to establish contact with other librarians, to attend exhibitions and visit suppliers. It may also be useful to read the case studies of libraries in NBM published in the periodical Audio-Visual Librarian.

Self Assessment

Fill in the blanks:

10. Microform dates back to the year 1839 when John Benjamin Dancer, an optician and professional photographer, produced the first …………………….

11. Since ………………… are fragile, the publishers insist on the library paying for any material which is damaged during preview.

12. ………………… tools for NBM are conspicuous by their absence, or, if they are present, they are very few in number.

6.5 Records and Registers

The Acquisition Department has to use appropriate records, registers, files, forms and other stationery at the various stages of its operation and procedures. Necessary forms and stationery have to be evolved from experience as need arises. This section however, will deal with some of the basic records and registers.

They are:

- Book Selection Card

- Budget Allocation Register

- Accession Register

- Work Diary

- Files

- Some Observations

6.5.1 Book Selection Card

The purpose of the selection card is to record data relating to the document under consideration. The chief advantage of adopting the card form for this record is the flexibility in arrangement and operation. In fact it is the same card which is written at the stage of initial recording of a document that is passing through the different card files corresponding to successive stages of operation, as shown below:

- Books Selection
- Books Approved
- Books-on-Order
- Books Received
- Books-in-Process

It is usual for libraries to use printed selection cards. A suitable format for this card can be designed by the library.

6.5.2 Budget Allocation Register

This is the basic financial guide for acquisition work and this must be consulted at the different stages of document selection, ordering and passing of bills. If necessary, copies of the register can be made for use in the Document Selection Section, Document Procurement Section and Document Accessioning Section.

6.5.3 Accession Register

The standard size of an Accession Register is 16" × 13".

6.5.4 Work Diary

The Work Diary is a desirable record to be maintained in the Acquisition Department. The diary can be written on a daily or weekly basis. Monthly and annual statistics can be taken from the diary for reporting as well as for work evaluation. All quantifiable job items can be accounted for through the diary, like the number of:

- titles noted for selection
- title intended
- titles suggested
- titles scrutinised
- selection cards written
- titles forwarded for approval
- titles listed for order
- titles checked for ordering
- titles ordered
- titles supplied

- titles accepted

- titles passed for payment

- titles forwarded for processing etc.

6.5.5 Files

A number of files relating to the various stages of operations have to be maintained in the department. Some of them are listed below:

- Budget

- Exchanges

- Enquiries

- Quotations

- Indents

- Standing Order

- Suggestions

- Blanket Orders

- Consultation

- Routine Orders

- Sanction

- Pre-paid Orders

- Gifts

- Direct Orders

- Institutional Membership

- Miscellaneous

- Deposits

6.5.6 Some Observations

The Acquisition work of a library is one of the house-keeping activities. The end re-work can be integrated with the other major housekeeping operations such as cataloguing, serial control and circulation. They may be computerised, even in small libraries, with a judicious selection of a hardware configuration and use of an appropriate software package.

Self Assessment

State whether the following statements are true or false:

13. The purpose of the selection card is to record data relating to the document under consideration.

14. The standard size of an Accession Register is 12" × 14".

15. The Acquisition work of a library is one of the house-keeping activities.

Case Study ## Automation of Library at Kendriya Vidyalaya Pattom

Thiruvananthapuram

Automating a school library is the process which restructures its functions and reinvents its services. By keeping a database as the basis, automation converge new technologies of information storage and retrieval with traditional housekeeping operations. An automated school library can serve the teaching and learning community more effectively. A reduction in the time needed for routine operations can be utilized to give customized services to the users. The process of library automation has a short history in our country. It needs proper planning and active implementation. Kendriya Vidyalaya Pattom initiated the automation of its library to cope with the ever changing needs of the students and staff. The modernization of the library media centre helps the students to become skilled information users and lifelong learners.

School Library Automation

School libraries started automation in the West in 1960's. Many schools in the US and European countries automated their library operations in a large scale in 1980s with the advent of microcomputers. Nowadays they are integrated with modern information networks which allow the students to access up-to-date information with ease.

Indian Scenario

In 1962 INSDOC experimented the preparation of a Union Catalogue of scientific serials. The Documentation Research and Training Centre (DRTC) introduced Docfinder (a computer used for finding documents) in 1968. The library automation in India was a slow process and got momentum in 1980s. Research and technical institutions were the forerunners and academic libraries followed them. New professional library management software packages entered in to the Indian market and some Indian companies also tried to make it with Indian flavour. Some libraries run by Public Schools became automated in late 1980s. More schools entered in the foray in 1990s with more funds and infrastructure. The schools in Govt. sector those had good libraries had been following the conventional library concepts and never looked for automation due to lack of funds. New millennium witnessed tremendous developments in Information and Communication Technologies (ICT), and the concepts of school libraries changed from mere storehouses of books to well-organized library media centres with variety of services (online and offline). Some educational institutions were the torchbearers, but most of them are lagging miles behind.

Libraries in Kendriya Vidyalayas

CBSE published a handbook titled "Organising School libraries: Guidelines" in 1997. Based on it, Kendriya Vidyalaya Sangathan has been giving periodical recommendations for the development of its libraries. KVS charted out a Library Policy in 2007 detailing the aim, functions and services of school libraries. In Govt. sector, KV libraries stay at the top with enough infrastructure and professionally trained librarians. Awareness of the importance of libraries in the academic achievement of the students make the administrators think about restructuring the libraries with new technologies for information storage and retrieval. Library automation is the foundation on which all other activities placed. It has been considered as the starting point of a library's first meeting with technology.

Contd...

Library of Kendriya Vidyalaya Pattom

The Vidyalaya started functioning in the year 1964. Now it has 3400 students and 125 staff members studying and working in two shifts. The library has a collection of 21,645 books and more than 40 multimedia CDs as on 31/04/2008. It subscribes 65 periodicals and 06 newspapers. There is one librarian for each shift and the library functions from 07 a.m. to 06 p.m. Class libraries function for classes I to V, which cater 1500 students of primary section. The main library is open to students from classes VI to XII. In total, the library serves around 1900 students and 125 staff members of the Vidyalaya. The library provides a host of services, which include reference, circulation, current awareness, reader's club, exhibitions and displays, competitions, information literacy programmes and online resources (Internet and CD-ROM searching).

Automation of the Library at KV Pattom

Better service to the users has been the main priority. During library periods, the students were not getting enough time to search issue or return of books. Since, the librarian is the single staff of the library, he/she couldn't help students timely in finding required information and provide other services such as reference, current awareness, teaching of information skills, online search etc. Collection management was also a problem. The varied holdings in the library were to be properly classified, catalogued and shelved. Then only the users could find them easily. The accessioning of the materials had been taken a lot of time. Annual stock verification was a tiresome process since it needed closing the library and literally ending its operations. Incorporating new technologies to cope with the ever-changing needs of the users such as Online catalogues; automated circulation, serials control, networking and resource sharing tended the library to opt automation as the first step.

Automation of the library will help us to set new targets.

(i) *Interlibrary Loan and Resource Sharing:* Automation helps to know the availability of a document in the library through its online catalogue. So, if more libraries become automated the search for a document became easier. The required document which is not present in one library can be loaned from other libraries controlled by interlibrary loan policies. The resources such as documents, services and staff can be shared in an automated environment more easily.

(ii) *Network of Kendriya Vidyalaya Libraries (KVLNET):* When the KV libraries of a cluster or region become automated they can be networked using LAN or WAN.

(iii) *Link with National or Regional Library Networks:* National library networks such as NISSAT, NICNET and regional networks such as DELNET, CALIBNET etc. can be linked with KVLNET. Think.com can act as a technology and resource partner.

(iv) *Web Interface:* The activation of WebOPAC will facilitate the search of library OPAC through Internet. The user can renew and reserve a book through online.

Library automation is the process which needs proper planning, timely implementation and periodical evaluation. The librarian with the administrators has to set the priorities after analysing the current status and future requirements. Selection of the suitable integrated library management package according to the needs of the users and the library is important. Retrospective conversion, OPAC, circulation and serials control, etc. should be conducted with care. Staff training and user education are keys to the success of the process. Library automation invites pragmatic approach. Here, those institutions which freed their visions from the traditional shackles of financial insecurities and fears of making proper decisions can only set the pace of journey to excellence.

Contd...

Academic achievement of a student is closely related to his/her ability to find, evaluate and use the required information according to the curriculum needs. An automated school library with a variety of resources and user oriented services can lead them to the goals.

Questions

1. Write down the case facts.

2. What do you infer from it?

Source: http://librarykvpattom.files.wordpress.com/2008/07/library-automation.pdf

6.6 Summary

- Acquisition of documents is one of the basic functions associated with any library.

- An acquisition subsystem performs four basic operations – selection, ordering, receiving and accessioning of documents.

- Acquisition reports are needed to document performance statistics and summaries of work done during the acquisition process in a specified time frame.

- Automation may increase successful cooperative collection development and expand the responsibilities of collection developers.

- Acquisition Department is one among them and is concerned with various activities relating to collection development.

- AD has a very crucial place in the overall organisation of a library.

- Document selection is the first phase.

- Proper planning of finance is basic to good acquisition work.

- The Acquisition Department has to use appropriate records, registers, files, forms and other stationery at the various stages of its operation and procedures.

- The Work Diary is a desirable record to be maintained in the Acquisition Department.

- The Acquisition work of a library is one of its house-keeping activities.

6.7 Keywords

Book Markets: Places where there are many retail and wholesale bookshops and publishing houses or their local offices in and around.

Clue Page: A secret page chosen and uniformly used in all documents belonging to a library for writing the Accession Number. This will be unnoticed by readers but could be used in identifying the document in case of theft, etc., even if the title page has been removed.

Document: A generic name for all types of reading materials acquired in a library and includes graphic, printed and processed items.

ISBN: The abbreviation standing for the International Standard Book Number. This is a system of assigning unique numbers to individual publications for purposes of document identification and delivery.

Out-of-Print Books: Books that are completely sold out and not available in the market.

Profile: An organised list of specific topics or information heads compiled out of surveying the needs of a set of information users. The profile explains who is interested in what information, and vice versa.

Subscription Books: Books published periodically or at irregular intervals and distributed against advance subscription rather than by sale of individual items.

User Need Survey: A survey conducted for a systematic study of the information needs of a specific group of people.

6.8 Review Questions

1. Enumerate the favours that govern the planning of the routine jobs of document selection work

2. List the major categories of sources of book selection, both for current and retrospective books.

3. Name the person (s), group(s), committee(s) that the involved in the process of selection of documents for a library.

4. List the bibliographical data that go into a Book Selection Card".

5. State the various routines of document selection procedure in 6/8 lines.

6. State the information to be supplied to the indentor with regard to the book recommended.

7. Name the records, registers and files that are maintained in the acquisition department of a library.

8. State the four categories of non-book materials.

Answers: Self Assessment

1.	True	2.	False
3.	False	4.	Professional
5.	Documents	6.	AD
7.	False	8.	True
9.	True	10.	Micro-Photograph
11.	NBM	12.	Bibliographic
13.	True	14.	False
15.	True		

6.9 Further Readings

Books Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Notes

Online links

http://article.sapub.org/pdf/10.5923.j.library.20120104.04.pdf

http://crl.du.ac.in/ical09/papers/index_files/ical-45_53_153_2_RV.pdf

http://www.ala.org/alcts/mgrps/ig/ats-dgautoacq

http://www.inflibnet.ac.in/downloads/brochure/SOUL.pdf

http://www.slideshare.net/Nilaranjan/library-automation-problems-and-prospect-12697946

https://www.ideals.illinois.edu/bitstream/handle/2142/7606/library trendsv37i3c_opt.pdf

Unit 7: Online Public Access Catalogue (OPAC)

Objectives

After studying this unit, you will be able to:

- Understand the meaning of Online Public Access Catalogue (OPAC)

- Discuss the history of Online Public Access Catalogue (OPAC)

- Describe Online Catalogues and Card Catalogues

- Understand the Online Catalogues and how they differ from manual catalogues

Introduction

The Online Public Access Catalogue (OPAC) is an information retrieval system characterized by short bibliographic records, mainly of books, journals, and audio-visual materials available in a particular library. This, coupled with a Boolean search interface and a heterogeneous user population with diverse needs, presents special problems for subject searching by end users. To perform effective subject searching in the OPAC system requires a wide range of knowledge and skills. The trend toward Web-based OPAC interfaces and the developments in Internet and digital library technologies present fresh opportunities for enhancing the effectiveness of the OPAC system for subject searching. Online Public Access Catalogue (OPAC) terminals are available on every floor of the Library. Through the OPAC you may search for titles held in the

Library, place reservations for items on loan, browse or cancel the reservations you have made, renew items you have borrowed, and view status/record of your library account, etc.

7.1 Meaning of Online Public Access Catalogue (OPAC)

An Online Public Access Catalogue (OPAC) is a computerized online catalogue of the materials held in a library, or a library system. OPACs are often part of an integrated library management system or software. The library staff and the public can usually access it in computers within the library, or from home via the Internet. Since the mid-1980s, it has replaced the card catalogue in most libraries. Since the mid-1990s, character-based OPAC interfaces are being replaced by Web-based interfaces. Today more complex OPACs offer a variety of search capabilities on several indexes, integrate rich content (book covers, video clips, etc.), and offer interactive request and renewal functionality.

Most integrated library systems offer a browser-based OPAC module as a standard capability or optional feature. OPAC modules rely on pull down menus, popup windows, dialog boxes, mouse operations, and other graphical user interface components to simplify the entry of search commands and formatting of retrieved information. Many libraries have their catalogues accessible via Internet; some of them can be queried using a simple browser, other using a special version of browser (with JavaScript and CSS features), and some others using Z39.50 clients. If one has few elements to identify a document, then he/she can use a meta-searcher where he/she can fill the query form once and spread his/her query over many library catalogues.

The OPAC has many advantages over card catalogues. It can store entries; it can add new entries, withdraw entries and print out updated version of a catalogue in book, card or shelf form. It can also be used to search and produce catalogue in CD, DVD, etc. It itself can be used as a catalogue cabinet with enhance features i.e. information can be stored within the computer and kind of entries required can be easily got as and when required. It has also the facility to input the data from the point of origin and output data can be transmitted directly to the place where it is needed by using teleprocessing.

An OPAC database records are usually derived from the MARC format. The records are brief bibliographic descriptions enriched with a small number of controlled subject descriptors (often taken from the Library of Congress Subject Headings) and a classification number (usually a Library of Congress or a Dewey decimal class number). The database records, thus, contain minimal information for searching – little more than the author, title, publication year, subject description, and a class number. The subject descriptors are selected to reflect the subject content of the item as a whole rather than to provide in-depth indexing of the information contained in the item.

Example: If a book contains many articles, subject descriptors are not assigned for each article but only to the overall topic of the book.

For periodical publications, only the periodical as a whole is described. Individual journal articles are usually not recorded in the database. This is in contrast to indexing and abstracting databases that provide keyword searching in the abstract and even the full text of articles, and provide exhaustive indexing of the content of journal articles. However, the distinction between OPACs and other kinds of information retrieval systems is blurring. Increasingly, OPACs are also providing links to full-text document, electronic books, and Internet resources.

Did u know? Most of the online catalogues in use today are what Hildreth termed second-generation OPACs.

Notes
Most OPACs are Boolean retrieval systems that perform exact matching and require the search query to be specified as a Boolean expression. Typical search features include the choice of keyword searching (i.e., searching for individual words in the title and subject fields) or field searching with automatic truncation (e.g., searching for a whole title or author name), the use of Boolean operators to combine two or more terms, the use of a truncation symbol, and limiting a search to specific fields. The onus is on the user to translate the user's information need into the subject headings and indexing terms used in the OPAC database and to refine the search based on the initial search result. Because most OPAC systems now offer Web access, OPAC interfaces are increasingly Web interfaces in the form of web pages containing HTML forms. Such interfaces are mainly form-filling interfaces. The user selects the type of search and the fields for searching either by entering the query in the appropriate input box or by toggling the appropriate checkbox or radio button. For keyword searching, the search expression can include Boolean operators as well as indications of which field(s) to search.

OPAC users are heterogeneous, varying widely in background, age, subject interests, and computer and information literacy. So the OPAC has to be designed to cater to a wide range of users, ranging from users who have little knowledge of what a catalogue contains and have little experience with computer terminals to librarians who are experienced in online database searching and who require the system to have powerful search capabilities.

OPAC is more useful than the traditional card formats because:

(i) The online catalogue does not need to be sorted statically. Here the user can choose the author, title, keyword, or systematic order dynamically.

(ii) Most online catalogue offer search facility for any word of the title. The goal of the grammatical word order which is to provide an entry on the word that most users would look for is reached even better.

(iii) Many online catalogues allow links between several variants of an author's name. So, authors can be found both under the original and the standardized name (if entered properly by the cataloguer).

Online cataloguing has greatly enhanced the usability of catalogues and its origin from the effort of Machine Readable Cataloguing (MARC) standards in the 1960s. The rules governing the creation of catalogue MARC records include not only formal cataloguing rules like AACR2 but also the special rules specific to MARC, available from the Library of Congress and also OCLC.

Example: **Online Public Access Catalogue (OPAC) in Erwin Library**

You wish to find materials on the topic "**evidence-based**" using a "**word or phrase**" (keyword) search of the **OPAC**:

1. Access the Erwin Library homepage at http://www.waynecc.edu/library/
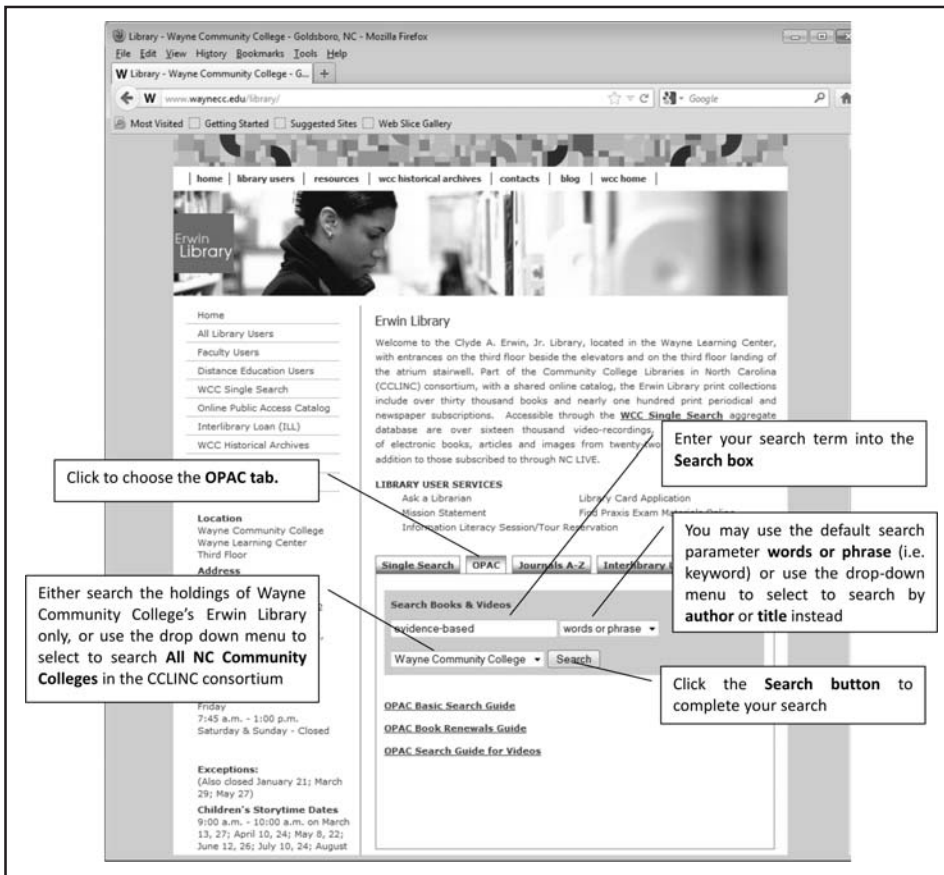
2. From the **WCC Single Search options** click the **OPAC tab** to access the **OPAC (Online Public Access Catalogue)** search area.

3. To refine your search, use the **drop-down menu** to the right of the **Search box** to set your basic search parameter, using **words or phrase** for a keyword search, **author**, if you know the exact name of the book's author, or **title** for a book or video title if you know it.

4. Use the **drop-down menu** beside the **Search button** if you wish to change the default search parameter from **"Wayne Community College"** (i.e. search only holdings in the Erwin Library), to **"All NC Community Colleges"**, if you want to find the item at any of the over fifty community colleges in the Community College Libraries in North Carolina (CCLINC) consortium

5. Into the **Search Books & Videos box** under the **OPAC tab** enter your search term (In this example we are using **words or phrase** for a **keyword search,** with the search term "**evidence based**."

   A keyword search will search for your chosen search term within the full catalogue record for each item in the library's collection, including title, author, subject and table of contents).

6. Click the **Search** button.

7. In the **Search Results list** illustrated below, item #5 shows "**evidence-based**" in the title of the book, so most of the book will probably cover your chosen topic.

8.   To verify if other items in the **Search Results list** that don't have "**evidence-based**" in their titles will be useful to you, click the **blue title link** of an entry see where the search term "**evidence based**" was found in the **Catalogue Record** for the item.

9. Click the **blue Catalogue Record link** to access the entire catalogue record containing all available information about the item.
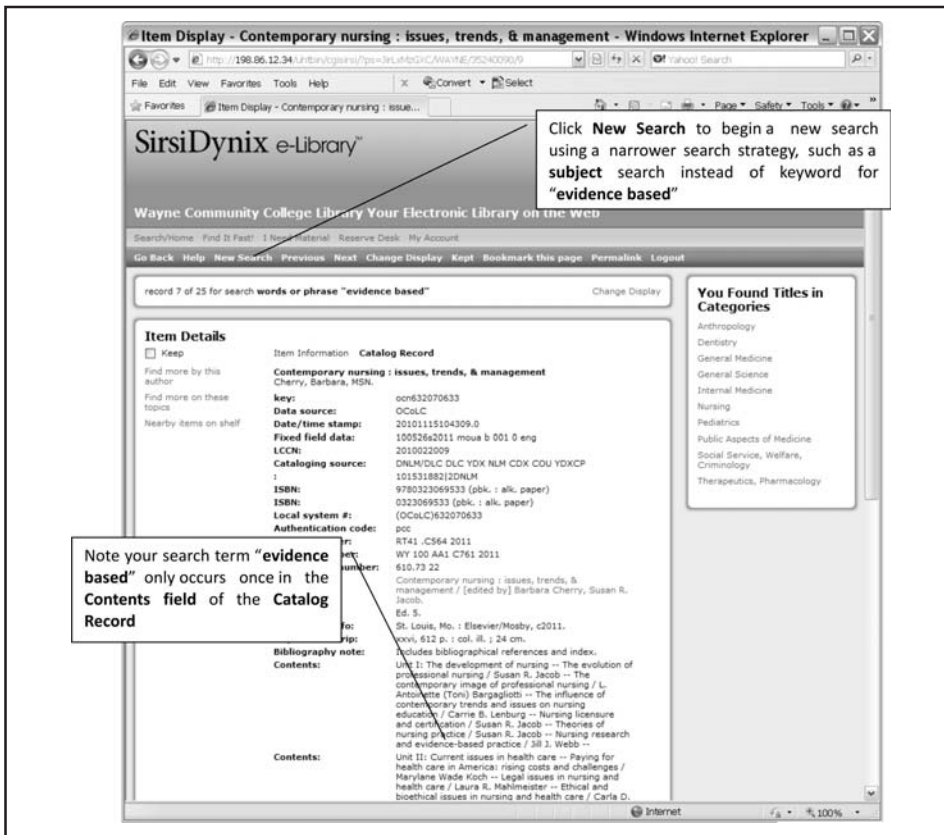
10. As this example illustrates, "**evidence-based**" only occurs in the **Contents** section of the catalogue record, meaning that only a small portion of the book deals with that topic. This could make the book less useful to your research. A **subject** search may be more useful in this case.

11. Conduct a **subject search** to find items that have more than a small part of their contents dedicated to your topic by choosing **New Search** from the top menu bar.
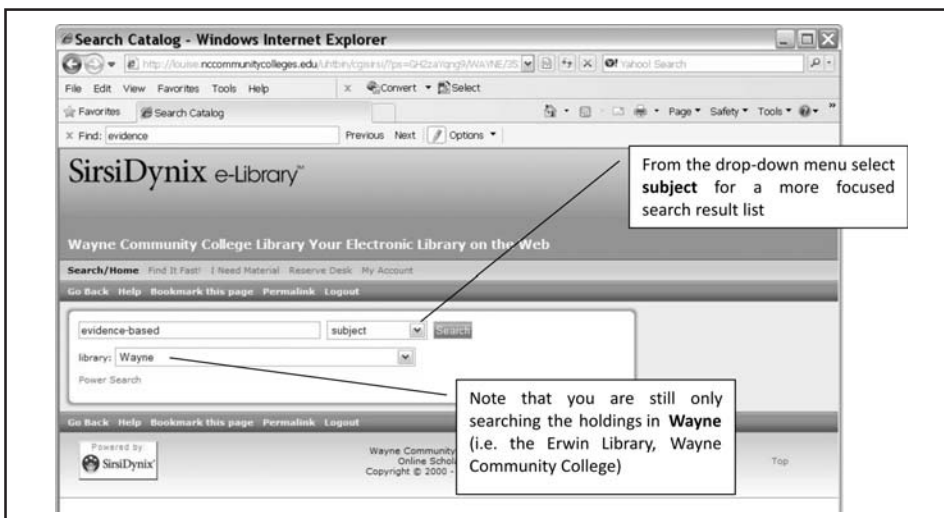
12. Choose "**subject**" from the right hand drop-down menu. Note that subjects are established by the **Library of Congress**, and you may have to do a few keyword searches of your topic to find a sample catalogue record with the **Subject term** (in blue) which most closely matches the topic you are searching.

13. Enter "**evidence-based**" into the left hand search box.

14. Click the **Search** button.

15. Since the subject search is more focused, your **Search Results list** will be shorter; in this example only **7 titles** instead of the 20 titles found with the keyword search, but each item will have a subject that is probably much more pertinent to your topic.

16. To establish the correct **Library of Congress Subject Heading (LCSH)** for any future subject searches on the topic, click on the **blue title link** for the entry, then the **blue Catalogue Record link**, beside one or two titles in the **Search Results list** and scroll down to find the LC **Subject terms** in blue text.

17. As the catalogue record in the example shows, the official **LCSH** is "**Evidence-Based Medicine.**" Note that a search of other catalogue records in the sample search's **Search Results** list will offer another **LCSH** of "**Evidence-based nursing**" as an alternative subject heading to use in future searches of the **OPAC**, or any other type of online database such as those in **WCC Single Search.** Most research databases use the LCSH standard.

Source: http://www.waynecc.edu/library/uploads/search-opac.pdf

Self Assessment

State whether the following statements are true or false:

1. Since the mid-1990s, Web-based interfaces are being replaced by character-based OPAC interfaces.

2. The OPAC has many advantages over card catalogues.

3. Most OPACs are Boolean retrieval systems that perform exact matching and require the search query to be specified as a Boolean expression.

4. OPAC users are homogenous.

7.2 History of Online Public Access Catalogue (OPAC)

In this section we will discuss the history of Online Public Access Catalogue (OPAC).

7.2.1 Early Online Catalogues

Although a handful of experimental systems existed as early as the 1960s, the first large-scale online catalogues were developed at Ohio State University in 1975 and the Dallas Public Library in 1978.

These and other early online catalogue systems tended to closely reflect the card catalogues that they were intended to replace. Using a dedicated terminal or telnet client, users could search a handful of pre-coordinate indexes and browse the resulting display in much the same way they had previously navigated the card catalogue.

Throughout the 1980s, the number and sophistication of online catalogues grew. The first commercial systems appeared, and would by the end of the decade largely replace systems built by libraries themselves. Library catalogues began providing improved search mechanisms, including Boolean and keyword searching, as well as ancillary functions, such as the ability to place holds on items that had been checked-out.

At the same time, libraries began to develop applications to automate the purchase, cataloguing, and circulation of books and other library materials. These applications, collectively known as an integrated library system (ILS) or library management system, included an online catalogue as the public interface to the system's inventory. Most library catalogues are closely tied to their underlying ILS system.

7.2.2 Stagnation and Dissatisfaction

The 1990s saw a relative stagnation in the development of online catalogues. Although the earlier character-based interfaces were replaced with ones for the Web, both the design and the underlying search technology of most systems did not advance much beyond that developed in the late 1980s.

At the same time, organizations outside of libraries began developing more sophisticated information retrieval systems. Web search engines like Google and popular e-commerce websites such as Amazon.com provided simpler to use (yet more powerful) systems that could provide relevancy ranked search results using probabilistic and vector-based queries.

Prior to the widespread use of the Internet, the online catalogue was often the first information retrieval system library users ever encountered. Now accustomed to web search engines, newer generations of library users have grown increasingly dissatisfied with the complex (and often arcane) search mechanisms of older online catalogue systems.

This has, in turn, led to vocal criticisms of these systems within the library community itself, and in recent years to the development of newer (often termed 'next-generation') catalogues.

7.2.3 Next-generation Catalogues

The newest generation of library catalogue systems are distinguished from earlier OPACs by their use of more sophisticated search technologies, including relevancy ranking and faceted search, as well as features aimed at greater user interaction and participation with the system, including tagging and reviews.

These newer systems are almost always independent of the library's integrated library system (ILS), instead providing drivers that allow for the synchronization of data between the two systems. While older online catalogue systems were almost exclusively built by ILS vendors, libraries are increasingly turning to next generation catalogue systems built by enterprise search companies and open source projects, often led by libraries themselves. The costs associated with these new systems, however, have slowed their adoption, particularly at smaller institutions.

Example: An example of a next generation OPAC system is included in the Libramatic software package.

Self Assessment

Fill in the blanks:

5. The 1990s saw a relative stagnation in the development of ……………………

6. Web search engines provided simpler to use systems that could provide relevancy ranked search results using probabilistic and …………………… based queries.

7. The first large-scale online catalogues were developed at …………………… University in 1975 and the Dallas Public Library in 1978.

8. Prior to the widespread use of the Internet, the online catalogue was often the first …………………… system library users ever encountered.

7.3 Online Catalogues and Card Catalogues

Online catalogues are a norm today; they are not static; they have developed rapidly and will continue to evolve further. By utilising the various capabilities of computers and telecommunications, online catalogues are adding new features that make them totally different from traditional catalogues. Online catalogues are now gateways to larger information systems or, as Hopkins (1993: 127) says, they are the 'one-stop information store'.

The online environment is an environment encompassing a wide range of information tools, both bibliographic (such as library catalogues, abstracting and indexing services and book trade databases) and non-bibliographic (such as numeric databases, directory databases, and full text databases). Library catalogues are now a small but very important component of the evolving online environment and are accessible through different tools in the networked environment, the public access computer system (PACS). The global network is the Internet including various PACS components such as Gopher, WAIS (Wide Area Information Servers), Netscape and Mosaic and other access modes such as Archie and FTP (File Transfer Protocol) tools. The Webpages created by libraries and other information providers are becoming very pervasive and are often used both by librarians and end users as linking sources for library information. The same workstation serves as a means of navigating the whole world of the Internet. In the online

environment not only are the information tools different from the traditional tools but also the whole concept of access to bibliographic information has changed.

⚠
Caution Time and location are irrelevant in searching the online environment.

7.3.1 Developments and Directions of Online Catalogues

As a result of a significant growth in scientific and technological information after the Second World War and a resulting expansion in library collections, manual systems could no longer respond effectively to the ever-growing information needs of society. In terms of fast and effective retrieval of bibliographic information, the card catalogue had many disadvantages. Its large size, complexity and high costs of maintenance made it more and more difficult for libraries to maintain as an up to date searching tool (Freedman, 1979a; Guilford, 1979; Matthews, 1985; Reynolds, 1985). It became obvious that a more flexible tool was needed to cope with the new conditions of libraries. It was thus necessary to think of alternative ways of constructing library catalogues that could be cost-effective, manageable and easy to use. Following on the application of computers in other fields, librarians became assured that the computer's theoretical capability to control library operations constituted adequate grounds for embracing a mechanised approach (Hazen, 1981: 30). As Weihs and Howarth (1988: 41) point out, "It was necessary to investigate the computer as a relatively cost-effective tool to provide library catalogues."

Computer applications, however, first occurred in library activities other than the provision of public access to the catalogue. Computers were used in libraries mainly for housekeeping types of activities such as circulation control, acquisitions and serial control. This did not directly affect patrons' access to the library catalogue (Matthews, 1985: 3). Library automation began in the early 1960s with the rationale that "If a job could be done by computer, then the number of staff required to work at a defined level of expertise could be reduced" (Montague, 1978: 313).

Although some evidence of automation of library operations other than cataloguing is reported from the 1950s and 1960s (Reynolds, 1985), it is the MARC (Machine-Readable Cataloguing) project that has been considered as one of the most important factors in the development of automated catalogues (Weihs and Howarth, 1988: 41). With the beginning of the MARC Distribution Service in 1969, large libraries began to utilise MARC magnetic tapes mainly for automated cataloguing in the standard form provided by the Library of Congress. The usefulness of MARC services in cataloguing, along with the increasing availability of computer technology in the late 1960s, led to more developments in automated catalogues.

In response to the needs of small and medium-sized libraries without access to a mainframe computer, centralised cataloguing services gave way to the establishment of bibliographic utilities in the early 1970s. The Online Computer Library Center (OCLC, formerly the Ohio College Library Center), established in 1971, has been considered to be a significant factor in the development of automated catalogues. With the standard cataloguing services of such bibliographic utilities, libraries were able to utilise the power of computer technology in a cost-effective way. The proliferation of MARC-based cataloguing led to the realisation of the importance of uniform, standardised bibliographic description as the nucleus of bibliographic services at national and international levels. The growth of bibliographic utilities in the early 1980s as well as developments in telecommunication technology accelerated the move toward centralised MARC-based cataloguing and the need for standardised descriptive cataloguing.

A significant factor further affecting the development of online catalogues was that some libraries began to use MARC bibliographic information for their circulation systems in an online mode. Using short bibliographic records rather than full MARC records for circulation operations, a

number of libraries tried to help their patrons in checking whether an item was on loan, on order, or at binding. This was a form of public enquiry module, which later developed into the online public access catalogue (OPAC). However, as Seal (1984b: 9) pointed out "The public enquiry module will often replicate the structure of a card or COM [Computer Output Microform] catalogue."

Another major factor leading to the rapid development of online public access catalogues was the contribution, by some library system vendors, of designing and developing public access modules as an important part of their turnkey systems. These vendors tried to incorporate a more sophisticated structure for the public enquiry module with more searching facilities. It should be noted that the early public enquiry systems were not integrated with other library modules, such as acquisitions and serials control.

Due to both the relative success and acceptability of online public enquiry modules, and pressures from patrons and librarians, libraries began to consider developing online public access catalogues (OPACs) with more bibliographic information, i.e., full MARC records and more searching capabilities, such as keyword access and Boolean searching (Seal, 1984b: 9). The possibility of utilising MARC records as the foundation of bibliographic databases led to the development of the concept of the Integrated Online Library Systems (IOLS) in which "The information that was input at the acquisitions stage would form a basis for the catalogue record which, in turn, would support all library functions. Thus, a number of integrated systems, such as GEAC, ULISYS, ATLAS, DOBIS, NOTIS and VTLS, were established incorporating this modular design.

The overall factors relating to the growing interest in online catalogues have been numerous. It is generally agreed that the most important factors that led to the rapid proliferation and development of online catalogues in the early 1980s were those related to their search, retrieval and display capabilities. Moreover, the opportunity of feedback from librarians and library patrons has provided a continuing momentum for upgrading the structure, contents and capabilities of online catalogues.

Tracing the historical development of online public access catalogues, Hildreth (1984, 1989) and Matthews (1991) identify three generations of OPACs. This categorisation is based on the features and capabilities of online catalogues in the processes of input, storage and output of bibliographic information. Matthews (1991: 7) claims that most of the existing online catalogues are still in the first or second generations and only a few systems have moved beyond first-generation. Added to the three generations identified by Hildreth and Matthews, recent advances in OPACs using graphical user interfaces (GUIs) have introduced a fourth generation to online catalogues.

First-generation Online Catalogues

Derived from circulation or cataloguing systems, first-generation online catalogues were in fact computerised card catalogues with almost the same traditional features. In contrast to the patrons' expectations from their use of computerised database systems, these new library catalogues provided limited author, title and controlled vocabulary subject heading access points. For this reason, first-generation online catalogues have been criticised as having no advantages over the card catalogue (Hildreth, 1984: 39; 1987: 650).

Searching in first-generation online catalogues was essentially based upon pre-coordinated information retrieval principles and was possible only through inputting the exact form of words or phrases. In contrast to searching in card catalogues, the patron had great difficulties as he/she had to input something into the system so that it could respond to his/her query. As this was possible only through inputting the exact form of words or phrases, which was difficult to remember, searching, was not as successful as the searcher expected. Keyword access was not available and refining a search by further limiting it to elements such as date of publication, language or country of publication was not possible.

The interfaces, which were usually menu-driven, replicated traditional catalogues in their form of access by providing mainly phrase access to separate subject headings, title, and author indexes (Mitev, 1989: 144).

Notes Output and display of search results generally had a single format.

Second-generation Online Catalogues

With further developments in information technology, it was possible to provide a more sophisticated system for input, storage and output of bibliographic information. Second-generation online catalogues are a departure from traditional card catalogues and incorporate many new features for the provision of effective access. In contrast to the limited input, storage and output capabilities of first-generation online catalogues, second-generation online catalogues are characterised as being powerful tools for the searching of bibliographic information. Keyword search, Boolean keyword search, cross index search and increasing or reducing of search results are among the features of second-generation online catalogues (Matthews, 1991: 11). Hildreth (1987: 650-651) writes:

Today's second-generation online catalogues represent a marriage of the library catalogue and conventional online information retrieval (IR) systems familiar to librarians who search online abstracting and indexing databases via DIALOG, BRS, ORBIT, MEDLINE, etc. Improved card catalogue-like searching and browsing (via headings and cross references) capabilities have been joined with the conventional IR keyword and Boolean searching approaches. Many online catalogues support the ability to restrict searches to specified record fields, to perform character masking and/or right-hand truncation, and to limit the results by date, language, place of publication, etc. Also, bibliographic records may be viewed and printed in a number of different display formats.

However, it should be noted that there are a number of major differences between online catalogues and these IR systems that make second-generation online catalogues easier searching tools (Ibid: 651). With a combination of different search methods, the user is offered possibilities that were not available in first generation online catalogues.

Due to improvements in the design of database management software, the structure and content of bibliographic records in second-generation online catalogues may be enhanced by incorporating full records augmented by information such as tables of contents, summaries, content notes, abstracts and links to full electronic texts. Considerable increase in the length of fields was another improvement in second-generation systems.

Interfaces are usually in two modes, menu-driven and command-driven; this makes the interaction between the user and the catalogue more flexible. In terms of user assistance, these catalogues provide more options including, for example, help screens, error messages and suggestive prompts. Ease of use and user-friendliness are two major features of today's second-generation online catalogues.

Third-generation Online Catalogues

As mentioned earlier, only a few systems have moved beyond second-generation online catalogues into third-generation online catalogues with enhanced or more sophisticated features. Due to the growing sophistication and availability of technology, new capabilities are being added to online catalogues making them more adaptive to the needs of library patrons. Free text search, enriched database search and simultaneous journal citation searching are among the retrieval capabilities in third generation online catalogues.

> *Notes* The mode of interaction has been developed to the point of conversational, adaptive dialogue and the bibliographic format can be tailored according to user preference. Operational assistance such as automatic, context-based correction is also available.

Fourth-generation Online Catalogues

Beginning from the late 1980s, a most recent development in online public access catalogues has been achieved in providing easy access to bibliographic information by using graphical user interfaces (GUIs) such as Windows. These systems, which can be considered as fourth-generation catalogues, have moved away from the traditional menu-type interfaces and are more associated with client server and graphical user interface. They use WIMP (windows, icons, mouse and pointers) interfaces to speed and simplify searching. With the Windows-style user interface available through PCs (personal computers, i.e., intelligent, and not dumb terminals), there is much more functionality. In these systems the user has the flexibility to click on various buttons, each of which carries a special function. Nevertheless, these systems do not eliminate but augment the keystroke access. There is also the possibility of using function keys for different purposes when keyboards are involved. In general, access is via mouse or keyboard or a combination of both.

Searching capabilities in the Windows version of OPACs are greater than those found in other generations of online catalogues. Pointer capabilities allow the searcher to select exactly the term he/she is looking for, while pull-down menus provide additional options to make searching even more useful. By using scroll bars and pull-down menus, browsing in different indexes is very simple. With the capability of post-Boolean searching, the search software also attempts to interpret users' search requests in order to present matches of greater or lesser interest to the user. This is called relevance ranking of the search terms, similar to second and third generation online catalogues, these systems search for terms through using an implicit Boolean 'AND'. Other Boolean operators such as 'OR' and 'NOT' can also be used to narrow down search results or such search strings can be constructed using the mouse alone. In addition, access has been enhanced by text retrieval qualifiers such as 'language', 'date' and 'form' of the text. With this feature, it is possible to include new data elements that help in the better identification of the sought item. Integral or add-on text retrieval modules to provide range searching, related term searching, wild card features, adjacency and proximity are supplied by some systems.

One of the recent additional advanced features of fourth-generation OPACs is the 'hypertext' function. Through this function, any word that the user selects or highlights can be used to search all the fields and subfields in all the records in the database for any occurrence of that word. This dynamic feature helps the searcher to navigate the database to find more relevant sources of information.

Self Assessment

State whether the following statements are true or false:

9. The global network is the Internet including various PACS components.

10. Derived from circulation or cataloguing systems, second-generation online catalogues were in fact computerised card catalogues with almost the same traditional features.

11. First-generation online catalogues are a departure from traditional card catalogues and incorporate many new features for the provision of effective access.

12. Interfaces are usually in three modes.

7.4 Online Catalogues: How They Differ from Manual Catalogues?

There have been some general attempts in the literature of the past decade to briefly compare different types of library catalogues. However, these comparisons have not been concerned with the concepts that underlie the nature and structure of the catalogue. In the following sections, the two types of catalogue will be compared in terms of the creation, manipulation and search/retrieval/display of bibliographic records.

7.4.1 Creation and Manipulation of Bibliographic Records

Structure and Content of Bibliographic Records

By 'structure of the record' is meant the bibliographic description consisting of data elements arranged and presented in a given order, such as card catalogue formats and MARC formats. It is generally understood that the medium, via which bibliographic records are created, manipulated and made accessible to the searcher, influences their structure and content.

The computer has made possible the enriching of the structure and contents of bibliographic records. While the space limitations of 3" x 5" cards generally restrict the level of data elements to be entered in a record, the content of a bibliographic record in an online catalogue makes it possible and desirable to include more data elements such as those fixed-length data elements indexed in field 008 in the USMARC bibliographic format and even data such as summaries, tables of content, and full texts. This issue has been of major interest to librarians and system designers during the past decade and there have been some proposals in this regard. User studies of the early 1980s showed that most users of online catalogues would like to have access to tables of contents, back-of-the-book indexes and summaries (Matthews, Lawrence, and Ferguson, 1983: 134). Other suggestions have included the titles of essays in collected works or festschriften, book introductions, book jacket material, and the assignment of more subject headings.

Did u know? With the advent and further development of online catalogues it has become possible to assign a larger number of access points to bibliographic records. In comparison to the conventional main and added entries in the card catalogue, any data element in a bibliographic record may be designated as an access point.

MARC Format and Categorisation of Data Elements

As a set of standards for the identifying, storing and communicating of cataloguing information, MARC has significantly contributed to the growth of library automation and to the development of online catalogues. Although the MARC record was conceived as an automated version of the catalogue card, the structure is flexible enough to store bibliographic information in more detailed fields and subfields due to the requirements of automated systems for separate identification of data elements. While the medium for the card catalogue is the 3" x 5 " card with a fixed, less flexible format, most online catalogues use MARC as a communication format for the exchange of bibliographic information. In this regard, MARC communicates bibliographic information with more flexibility than the card catalogue. With the machine-readable format, in which the bibliographic information on a record has been broken down into fields and subfields, it is possible to separately identify each data element. This approach also allows for inclusion or exclusion of data elements for output as desired.

Based on the MARC format, bibliographic records can be created and tailored according to the specific needs of the library without either discarding standardisation or diminishing the quality

of cataloguing. In the card environment, cataloguing depends on a longer process of manual checking against other catalogues (such as NUC, the National Union Catalogue), the ordering of card sets and receiving and interfiling them in the catalogue. This process in online catalogues is done more comprehensively and easily by subscribing to bibliographic utilities or by purchasing MARC products and downloading the needed records into the library's automated system.

MARC records permit a fuller level of description; more data elements to be included in the description and many more data elements to be assigned as access points for retrieval. A MARC record also includes other data, including non-bibliographic data that are used for catalogue maintenance. There is now a trend toward preserving detailed bibliographic records in machine-readable form. According to Reynolds (1985: 285):

"The amount and type of information that constitute a 'full bibliographic record' is certainly open to debate, but since the late 1960s the accepted standard has been the MARC format. The data that can be contained in a MARC record include the entire spectrum of information normally presented on catalogue cards plus a great deal of other potentially valuable categorizing information that can be encoded in fixed elements and elsewhere on record."

However, MARC format has been criticised for being an electronic version of the catalogue card and for its limited accommodation of hierarchically structured information (Gaynor, 1996: p. C). Systems may differ from one another in the indexing of fields and it is often difficult to find out what fields are indexed by a given system.

Caution The results in retrieval and display problems, leading to user confusion.

Bibliographic Standardisation

In comparison to manual systems, the online environment gives much more emphasis to the concept of standardisation. Although the idea of standardised bibliographic description seems to have first appeared with derived cataloguing and the sale of Library of Congress cards in 1898 and later with the introduction of the National Union Catalogue (NUC), it was not until the 1970s that the application of computers to library operations and the advent of online catalogues gave to standardisation a much more significant role. With regard to the description, choice and form of data elements to be included in a bibliographic record, conformity to standards, e.g., cataloguing codes, ISBDs and MARC formats, are vital to online catalogues. Unlike libraries of two decades ago with their independent card catalogues, libraries of today often create their own catalogue records according to national and/or international standards for the purposes of easy communication of and access to bibliographic information. Now, it is common for libraries of any size to participate in networks. One result of this, as Wajenberg (1992: 105) points out, is an ever-increasing pressure to conform to national and international standards.

Uniformity and consistency are basic requirements for effective bibliographical control. The rapid growth of shared cataloguing systems, developments in bibliographic utilities and the need for bibliographic exchange between databases in the last decade has led to a stronger reaffirmation of the value of standardisation in bibliographic records. Standardisation helps bibliographic records to be uniformly created, manipulated, exchanged and retrieved. According to Weihs and Howarth (1988: 78–79):

"As the cataloguing community moves closer to making the ideal of universal bibliographic control a reality through local, regional, provincial, national, continental and international networks, all libraries assume the responsibility of maintaining standards requisite to

maintaining the network. Integration and standardization are the keywords in the increasing movements towards, and promotion of, interconnected telecommunicating automated systems".

Despite this emphasis on the significance of standardisation in the online catalogue, this concept has been considered only in the inputting of data elements in bibliographic description and not in the output and display, whereas in the card catalogue both input and output are standardised. For example, both the card catalogue and the online catalogue conform to the ISBD standard for the input format, i.e., the order of areas, punctuation and levels of description. However, in online catalogues the output format is not fixed as in card catalogues and may be flexible.

As Gorman and associates (1990: 32) state, the standardisation and formalisation of description and access points is crucial to the online environment and to the effective exchange of bibliographic records. As an important concept that has developed over the last hundred years to meet the changing forms of the catalogue and the needs of the profession, standardisation will continue in the future and as Wajenberg (1990: 497) points out, at an accelerated pace.

Input Inconsistencies and Level of Tolerance

A major difference between a manual and an automated catalogue lies in the fact that the creation of bibliographic records for online catalogues demands more precision and logic in terms of typography, spelling, punctuation, spacing, coding of fields and subfields. This is a critical requirement for computerised systems, since such errors can result in a serious separation or an improper sequencing of entries and therefore can lead to the irretrievability of records. In other words, any errors, even if very small, for instance a faulty keystrokes, will be magnified in the online catalogue (Knutson, 1990: 24). However, in a manual system, when filing catalogue cards or when retrieving information, the human brain can often ignore such minor errors and treat them as if they are correct and file them in the right place.

Errors and inconsistencies can be corrected in the process of filing cards, whereas in the automated catalogue there is a lower level of tolerance towards such errors as variations in format, filing and indexing, and literal and logical inconsistencies within the catalogue. In general, the online catalogue is far less forgiving of cataloguing and typographical errors than is the card catalogue.

7.4.2 Construction and Maintenance of the Catalogue

Structure and Content of the Catalogue

By 'structure of the catalogue' is meant how the catalogue is built up, the kinds and content of files and indexes constituting it and the relationships of these files and indexes to one another.

Example: A card catalogue, whether in dictionary or divided form, may include different files such as authors (personal and corporate); references; titles (including other title information and series titles); subject headings (including references) and shelf lists.

The advent of the online catalogue has given new dimensions to the catalogue's structure. It is generally maintained that the online catalogue can support a more complex yet more dynamic structure than that of the card catalogue. The online file may be independent and self-contained, it may be related to files of similar scope and structure or it may be integrated with other files such as holdings, circulations, acquisitions and authority files. The online catalogue provides services that were not part of the traditional library catalogue. Access to circulation information, status information, holding information, indexing of special collections, serials and so on have become possible through the development of the contents and structure of the catalogue (Potter, 1991: 77).

Integration of the Catalogue

Integration has been considered as an important feature of the recent online catalogue in the sense that different parts of the library automated system are integrated through the use and manipulation of the same record as the basis for different library operations. In such integration, a single master bibliographic record is tagged and can be manipulated for different library operations, such as acquisitions, cataloguing and circulation. A consequence of integration of the online catalogue, as pointed out by Buckland (1992: 34), is that bibliographic information in different parts of a library system, as well as other useful information, can be accessible to users and to other libraries. Such a concept indicates the importance of uniformity and standardisation of bibliographic records in the online environment.

Another interpretation of integration in the online environment is related to various methods of access to bibliographic information (Hagler, 1989: 205). In such integration, different files and databases can be accessible via the same terminal. This concept has opened up a new era in bibliographic services and is considered as a significant factor in the enhancement of the catalogue. There are increasing attempts to build information systems with integrated access to different types of information services. The trend toward the integration of book trade bibliographic databases and A&I services with the online public access catalogue is an approach which makes the library catalogue a window to the whole bibliographic apparatus, a concept not feasible in the manual catalogue.

Authority Control

Authority control ensures the consistent use of names, series and subjects. No bibliographic record can be entered into the system until all assigned headings under which it can be searched are verifiable against the approved authority file (Hagler, 1985: 15). In a manual system, it is a time-consuming and costly operation and requires the services of skilled staff. There are many advantages to authority control in an online catalogue: in terms of maintaining cataloguing operations, it is particularly advantageous when major revisions to name and subject headings have to be done. In terms of searching, the actual search that the user does is via an authority control file. What the user inputs to the system is automatically switched through the index (authority file) to the correct form. In the online environment, the authority records are usually linked with bibliographic records.

There are a number of reasons for the resurgent interest in authority control in the online environment. The various difficulties that users have had with searching names and, as Potter (1986: 128) points out, the inconsistencies and errors in the records used to build the databases for online catalogues have led to new attention being given to the concept of authority control. For example, the ability to search personal names in either direct order or through initials has led to the enhancement of the scope and structure of authority files. Another major difference in the process of authority control between a manual system and an automated system is that correction or change of any heading in the card catalogue is a time consuming operation, whereas this task in some automated systems is to a great extent facilitated through a 'global change' which automatically generates a correction or change in all relevant records.

Filing Rules and Problems

In any library catalogue, access points are usually filed according to alphanumeric order, which is a conventional arrangement applicable to most information systems accessed by human beings (Hagler, 1991: 263). However, filing is different in the manual catalogue and the automated catalogue.

The arrangement of access points has always been of particular interest to librarians and there have been a number of specific filing rules published to date. The ALA Filing Rules, The Library

of Congress Filing Rules developed by John Rather, and the rules developed by the British Library Filing Committee are among the most important. Although developments in filing rules have been strongly in the direction of common sense and are oriented toward the intelligent user (Rather, 1972), users actually have major problems in identifying the exact location of a heading in the sequential order of a large card catalogue.

In a manual system, filing is flexible and can be executed according to the order which seems desirable to the catalogue user, whereas, in a computer catalogue, it must follow the logic of the computer. Filing in a manual system follows the principle of file as if: that is, the form and order in which access points are arranged is according to the interpretation of the librarian with the supposition that the arrangement would be the most desirable to the user. For instance, the number 3 can be filed as if it were the word three. The use of the computer has influenced filing practices and it is generally agreed that the principle of file as is, which is necessitated by the introduction of computer filing, has more validity in the computer environment (Byrum and Hinton, 1979: 180; Gorman, 1979: 135; Malinconico, 1980: 33). This principle states that characters or words should be filed as they are and not as if they were something else; for example, the number '3' as 3, and 'three' as three.

This realisation of the logical as well as the practical differences between filing in a manual catalogue and a computer catalogue came with the earliest attempts in the application of computers to bibliographical work. Current filing rules, which were developed for manual systems, proved not to be effective in a computer environment.

Users of online catalogues can encounter many problems when searching for bibliographic information. Due to different software specifications, computer-based filing has not been entirely standardised and the burden of thinking, for example, about the exact form of access points and the way punctuation and non-alphabetic symbols are treated is left to the user. In manual filing it is possible, by a simple convention, to ignore stop words such as 'the', 'and', 'of', 'a', 'an', etc. at the beginning of titles whereas, in the computer catalogue, this issue demands special programming and in some cases they are difficult to handle (for example, if the stop word is a necessary part of the title and is not to be ignored).

7.4.3 Searching, Retrieval and Display of Bibliographic Records

User Interfaces

A significant difference between the online catalogue and the card catalogue comes at the stage in which the user interacts with the catalogue, i.e., bibliographic records can be searched, retrieved and displayed. Online catalogues are here considered to be a great departure from card catalogues and it seems that there will be more developments in this regard in the near future.

While the card catalogue is a self-evident medium with a clear physical existence, the online catalogue is not revealed to the users and is not easy to grasp in their first interactions with it. In an online environment, the user cannot immediately understand the catalogue or its structure, coverage and searching mechanisms unless he/she interacts with the system and tries different options for searching and displaying of bibliographic information. Despite these limitations of the online catalogue, users show a high degree of satisfaction with the variety of features and capabilities it has at the output stage.

Searching and Retrieval Capabilities

With regard to searching capabilities, the online catalogue is a significant departure from traditional library catalogues. One of its most interesting features and a major advantage over the card catalogue is the ability of the user to search for the needed item in a variety of ways that

are not available in the manual catalogue. Online catalogues are able to generate both a greater number of access points as well as new searching capabilities that enable the user to search the catalogue with little information to hand. In addition to controlled-vocabulary searches by author, title and subject headings, for which relevant indexes have been created and maintained in the online catalogue, it is possible to search bibliographic records through access points such as other title information, series, standard numbers and any other significant data through keyword searching. In general, although there are still shortcomings in the searching capabilities of online catalogues, particularly in subject searching (Markey, 1984; Crawford, 1987a; Klugman, 1989; Lancaster, 1991; Larson, 1991), the findings of various studies indicate that users show much enthusiasm in online catalogues' searching capabilities.

Output and Display

Display of bibliographic information is another major aspect in which the online catalogue departs greatly from the card catalogue. Surveying OPACs in a number of Canadian academic libraries, Cherry et al. (1994) report that screen display is the best developed area in online catalogues. The last step at the catalogue, viewing a search result through the display of the bibliographic record(s), is what the user actually gains from the system. The quality of such a display affects the overall usefulness of the catalogue (Crawford, 1987: 192). While the form and content of bibliographic records in the input/output format in the card catalogue (even when computer-produced) are fixed, the online catalogue permits a flexible format, with the possibility of displaying bibliographic information in a variety of ways and at different levels. The ways in which bibliographic information is presented in the online catalogue in response to searches vary from system to system. Each system has its own techniques for manipulation of a search result. This is impossible in the card technology where space limitations and the fixed form of bibliographic description do not permit any flexibility or manipulation of search results.

The level of bibliographic description is usually flexible and can be designed according to the user's needs. On the other hand and from a system perspective, as Boll (1990: 20) points out, there is a range of display formats suitable for a computer screen or a page printout rather than a three by five inch card. Online display formats usually include: (1) 'brief-listing display' which shows, on one or more screens, the overall results of a search through 'author', 'title' and 'date' of publication, (2) 'medium-level display' containing the standard bibliographic description, access points and status and location information, and (3) 'full bibliographic display' which shows full description with all access points, including added entries, and may contain summary and/or table of contents of the item.

Another major difference between the online catalogue and the card catalogue is the way in which data elements in a record make up and represent a bibliographic record. Reynolds (1985: 501) points out three functions in this regard: the labelling of data elements, the sequence in which data elements appear and the spacing between them. The online catalogue can include identifying labels before data elements for distinguishing the bibliographic text in a record. Labels may be highlighted, or displayed in uppercase characters or in a different colour. In relation to the sequence of data elements appearing in a bibliographic record, there is a fairly high degree of uniformity among online catalogues (Reynolds, 1985: 501). As in the card catalogue, the arrangement usually follows the numerical sequence of MARC tags or the ISBD order. Some online catalogues do not incorporate ISBD punctuation on the basis that users do not comprehend such 'secret punctuation' (Crawford, 1987: 196).

However, it should be noted that a number of problems may arise from the differences in the input and output formats in the online catalogue. A problem which would be difficult for the user to understand is that the relationships of headings (i.e., access points) to bibliographic data may not be clear to him/her. For example, the role (i.e., the responsibility) of persons associated

with the work or manifestations of a work may not be distinguished in the way these names are displayed on the screen in conjunction with the title of the work. Therefore, the user may miss what he/she is seeking.

Access and Availability

Unlike in a manual system, the user of the online catalogue has access to bibliographic, circulation, acquisition, holdings and location information at the same terminal, whether within the library or in other libraries through remote access. Again, this capability may be an indication of the need for uniformity and standardisation of data elements and also the importance of integrity in the structure of different files in the system.

In contrast to the possibilities for online consultation, card technology is a strictly localised medium with many physical restrictions to its use. Almost all libraries have a single set of catalogue cards for a document. To some extent a book catalogue or a COM catalogue might help in making the library catalogue available in different locations but these catalogues are costly to update at regular intervals, particularly when the collection is very large.

Unlike the card catalogue, the online catalogue is accessible through terminals located in different places in the library and outside the library via local area networks (LANs) and wide area networks (WANs). In the online environment it is possible for different users, whether inside the library building or outside it, to use the catalogue online and to even search the same record simultaneously. In terms of access to library catalogues, distance has now become irrelevant. Technology has enabled us to have decentralised access to bibliographic information.

Interconnectivity is one of the most important goals of libraries today and can take different forms. Many library catalogues are now accessible through the different tools in the Internet such as Netscape, Gopher, Mosaic and Telnet. This is a great advantage over the manual system and will continue to expand with further developments in telecommunication allied to a decrease in telecommunication costs. There is also more flexibility with interconnectivity for the searcher to go from one catalogue to another. This is done through the same catalogue or other catalogues which have a WWW forms-based interface.

Task   Critically examine the Web-based online public access catalogues of IIT libraries in India.

Self Assessment

Fill in the blanks:

13. The …………………… has made possible the enriching of the structure and contents of bibliographic records.

14. …………………… has significantly contributed to the growth of library automation and to the development of online catalogues.

15. Uniformity and consistency are basic requirements for effective …………………… control.

16. …………………… has been considered as an important feature of the recent online catalogue in the sense that different parts of the library automated system are integrated through the use and manipulation of the same record as the basis for different library operations.

Notes

Caselet

Use of Online Public Access Catalogue at Annamalai University Library

The first library online public access catalogue was introduced in the early 1980s and researchers have been conducting usability studies of these catalogues ever since. In designing our usability study, we incorporated what we felt to be some of the best, most useful methods from previous research. However, our research is unique in that it compares four different library OPACs (both academic and public) from a specific geographic location, Seattle. In 1999, Chisman, Diller, and Walbridge conducted a usability study of the Washington State University Library OPAC. The library was preparing to implement a new version of the OPAC, and before it did so, wanted to test how usable the new catalogue was, test whether or not people understood its features, and incorporate participants' feedback into the design of the new OPAC. Chisman, Diller, and Walbridge found that most of the OPACs problems were related to subject indexes and article databases; participants could not find and did not understand how to use these features.

In 2002, Halcoussis et al. conducted a usability study of California Institute of the Arts Library OPAC to identify "causative factors determining catalogue user success in finding information, user attitudes to catalogue organization, and user ability to navigate the catalogue (p. 148)." These researchers had participants conduct four different kinds of searches, took observation notes, and then had participants answer evaluative questions about the catalogue. Halcoussis et al. discovered that subject-searchers are more likely to run into difficulty while using the library catalogue and are therefore more likely to view the catalogue in a negative way. Also, users who spend a lot of time on a search and retrieve a large number of search results are also more likely to report having difficulty using the OPAC.

In 2004, Novotny conducted a protocol analysis study to determine the usability of the Pennsylvania State University Library OPAC. Participants were to complete five structured tasks using the catalogue and were to tell observers exactly what they were thinking while they completed each task. Researchers found that the use of internet search engines has had a profound effect on the way that library patrons try to use and the expectations that they have for library OPACs. Because library OPACs are not necessarily designed to work in the same way as internet search engines, this created some problems for participants and highlighted areas of the catalogue that could be modified to help users search more effectively.

The interface of the OPAC of the Annamalai University was not optimal for serving user needs, with apparent limitations in its design, a lack of screens for assistance, a deficient system of searching by subject heading, and very limited search options. Users have many kinds of problems performing subject searches in OPAC systems. Typical users do not have the range of knowledge and skills needed for effective subject searching. With developments in Internet and Web browser technologies, many of the proposed improvements can be instituted without major changes to the OPAC back end system. Changes can easily be made in the design of the web pages used as an interface to the OPAC. OPAC interfaces are playing increasingly expanded roles. They now provide access not just to records of books and journals held by a library but also to multiple library systems, to full-text documents and journal articles, and to databases and other resources on the Internet.

Following recommendations have been made for optimum utilisation of OPAC facility in the University library:

- The study observed that the OPAC does not offer various essential features such as spell check software, quick search, online reservation, online renewal, new arrivals and book cover display facilities. Moreover these features, there is no provision for links to electronic sources. Therefore, it is strongly recommended that the said features must be incorporated in OPAC.

- OPAC should have more user-friendly online help that may provide direction to users to start a search and to show next steps during a search.

- To facilitate the users, the University library should organise user education programmes on the use of different techniques and strategies in retrieving information about the documents. The instruction programmes may enhance user knowledge and basic skills for searching OPAC.

- It is evident from the study that the users were not having basic skills of searching OPAC. Therefore, they needed the assistance of library staff near OPAC terminals for optimum utilisation of this service.

Source: http://article.sapub.org/pdf/10.5923.j.ijis.20120206.01.pdf

7.5 Summary

- With regard to all the differences between the card catalogue (as a representative of the manual system) and the online catalogue (as a representative of the online environment), it can be concluded that the interactive online catalogue has many advantages in terms of content, structure and search/retrieval/display capabilities.

- Today's online catalogues provide more effective access to bibliographic information through capabilities that were not possible in the manual catalogue.

- These capabilities have affected the ways in which users use the library catalogue and it seems that, with further developments in information technology, there will be more opportunities for enhancing, extending and expanding the online catalogue.

- Similarly, access to remote library catalogues and other bibliographical tools has been significantly improved through the demonstrated superior performance and effectiveness of computers and telecommunication technology.

- The online catalogue is now evolving into one of several components of a larger, integrated information system.

- Thus, remote access places OPACs in a potentially key position in relation to information systems generally.

- In the 90s, the computer is now an integral part of modern society and has caused fundamental changes in many aspects of our life, most basically in the ways we organise information for fast and effective retrieval.

- However, unlike in the manual environment, cataloguers do not have control over the whole processes of record creation and catalogue construction as manipulation and output of bibliographic data are less controlled by cataloguing codes.

- From a comparison of the online catalogue and the card catalogue it can also be concluded that the cataloguing standards which are based on the concept of the traditional catalogue need to be reassessed and redesigned in terms of their relevance to the new electronic environment.

- A critical question here is whether cataloguing principles and rules need to be reconstructed and developed on a basis parallel to the development of the environment in which they are used.

7.6 Keywords

Browser: Browser, short for web browser, is a software application used to enable computers users to locate and access web pages.

Card Catalogue: A card catalogue is an alphabetical file of subjects, authors and titles for material that is acquired by a university library.

Database: A database is a collection of information organized to provide efficient retrieval.

Integrated Library System (ILS): An integrated library system (ILS), also known as a library management system (LMS), is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed.

*Online Catalogues***:** Internet-based presentation of a set of items available for purchase, including description, price, and ordering information.

Online Computer Library Centre: The Online Computer Library Centre (OCLC, formerly the Ohio College Library Centre), established in 1971, has been considered to be a significant factor in the development of automated catalogues.

*Online Public Access Catalogue***:** An online public access catalogue (often abbreviated as OPAC or simply library catalogue) is an online database of materials held by a library or group of libraries.

*Stagnation***:** Stage in an economic cycle in which little (1 per cent or less) or no growth or decline occurs.

Standards: Universally or widely accepted, agreed upon, or established means of determining what something should be.

*Truncation***:** Truncation is a searching technique used in databases in which a word ending is replaced by a symbol.

*Webpages***:** A web page (or webpage) is a web document that is suitable for the World Wide Web and the web browser.

7.7 Review Questions

1. What do you understand by Online Public Access Catalogue?

2. Why OPAC is considered as more useful than the traditional card formats?

3. Describe the history of Online Public Access Catalogue.

4. Discuss the developments and directions of online catalogues.

5. Explain the factors relating to the growing interest in online catalogues.

6. Elucidate the second-generation online catalogues.

7. Do you think that searching capabilities in the Windows version of OPACs are greater than those found in other generations of online catalogues? If yes, give reasons.

8. Discuss the creation and manipulation of bibliographic records.

9. Write brief note on the construction and maintenance of the catalogue.

10. Describe searching, retrieval, and display of bibliographic records.

Answers: Self Assessment

1. False
2. True
3. True
4. False
5. Online Catalogues
6. Vector
7. Ohio State
8. Information Retrieval
9. True
10. False
11. False
12. False
13. Computer
14. MARC
15. Bibliographical
16. Integration

7.8 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Online links

252Fviewcontent.cgi%253Farticle%253D2241%2526context%253Dlib
philprac%26ei%3D8A4LUrHlNYfDkAWT04GgAw%26usg%3DAFQj
CNEGxPxe_H1TqWXX2cRfkw7K1HlMNQ%26bvm%3Dbv.50723672
%2Cd.dGI#search=%22Online%20public%20access%20catalogue%22

http://archive.ifla.org/VII/s13/guide/opacguide03.pdf

http://article.sapub.org/pdf/10.5923.j.ijis.20120206.01.pdf

http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2241&context=
libphilprac&sei-redir=1&referer=http%3A%2F%2Fwww.google.com%2
Furl%3Fsa%3Dt%26rct%3Dj%26q%3DOnline%2520public%2520access%
2520catalogue%26source%3Dweb%26cd%3D13%26cad%3Drja%26ved%3
D0CE4QFjACOAo%26url%3Dhttp%253A%252F%252Fdigitalcommons.unl.edu
%252Fcgi%

http://www.degruyter.com/view/product/37586

http://www.mklj.si/eng/index.php?option=com_content&view=article&id=
4&Itemid=68

http://www.waynecc.edu/library/uploads/search-opac.pdf

Unit 8: Library Automation in Technical Processing

CONTENTS

Objectives

Introduction

Objectives

After studying this unit, you will be able to:

- State the information regarding electronic resources

- Explain about the library technical services

- Describe about process automation

- Elaborate the electronic resource management

Introduction

In the last decade, library automation has undergone a transformation that reflects changing definitions of library service in general and access to resources in particular. The introduction of

global networking such as internet, cheap availability of technology and new media technologies made information more accessible. Today's integrated library systems must not only provide modules which automate traditional library functions but also capable of connecting through the local systems into systems of other information or knowledge suppliers, databases and internet.

8.1 Electronic Resources

The library profession recognized the potential of computers to make library resources more accessible early in the development of computer technology. Librarians were often enthusiastic and sometimes early adopters of technology. The use of electronic resources in libraries began with the development of the machine-readable cataloguing (MARC) format in the mid-1960, a full 30 years before the introduction of the World Wide Web and its subsequent ubiquity. Bibliographic databases became available at approximately the same time. Libraries provided access to data sets such as census and survey data as early as the 1970's. During the microcomputer revolution of the 1980's, libraries acquired software and data on diskettes and offered databases on CD-ROM. Databases on CD-ROM began to contain full text. Search interfaces became more straightforward and simpler to use. Online catalogues became more common, and libraries began to offer them through the pre-World Wide Web Internet. Tim Berners-Lee created the World Wide Web in 1990. The subsequent development of the Mosaic browser in 1992 led to widespread use of the Web beginning in 1993.

Notes The graphical interface and the later development of Web search engines such as Yahoo! made resources on the Internet more accessible to average patrons.

Web-based electronic resources were widely available beginning in the mid-1990's. Libraries offered Web-based catalogues, bibliographic and full-text databases, electronic journals, and eventually electronic books through the Web. Patrons no longer had to go to the library to do a significant amount of their research. The pursuit of electronic resources by libraries was driven by the core values of library science. It is possible to recognize in Ranganathan's five laws of library science the motivation that drove libraries to incorporate electronic resources into services and collections. Paraphrased to better suit electronic resources, the laws read: resources are for use, every person his or her resource, every resource its user, save the time of the user, and the library is a growing organism. Each technological development in library electronic resources during the 20th century was intended to make access to resources more direct, convenient, and timely for the user. The implementation of electronic resources made the library a growing organism as libraries adapted processes and reorganized staff repeatedly to accommodate the changes inherent in the use of constantly changing technology.

8.1.1 Online Catalogues

Electronic resources began to dramatically change the way patrons accessed library resources in the mid-1960s. The card catalogue, a standard fixture in libraries for a century, faced its demise. One of the major developments during the 1960's was machine-readable cataloguing (MARC). The MARC format dramatically changed the way library resources were processed and accessed. The library professionals who created MARC recognized the need for automation and a supporting data standard at a critical juncture in the development of technology, and took the necessary steps and risks to develop one. The flexible and expandable MARC format demonstrated the foresight and vision of those who developed it over 40 years ago.

8.1.2 Machine-Readable Cataloguing

In 1964, the Council on Library Resources commissioned a study about capturing cataloguing data in machine-readable form. A report called "***The Recording of Library of Congress Bibliographic Data***" in Machine Form resulted from the study, and was used as the basis for the first Conference on Machine-Readable Catalogue Copy in 1965. Participants at the conference determined the requirements for a machine-readable record and discussed how it might be used in libraries.

Did u know? The Library of Congress' Information Systems Office developed and distributed a report based on this meeting titled "*A Proposed Format for a Standardized Machine-Readable Catalogue Record*" (Avram, 1968).

During a second conference held at the Library of Congress, the MARC Pilot Project was conceived. Planning for the project began in February 1966. The MARC I format was created, codes for place of publication, language, and publisher were developed, computer software was designed, and procedures were developed and documented. In November 1966, the Information Systems Office of the Library of Congress began to distribute magnetic tapes of MARC records to 16 libraries that agreed to participate in the pilot project. The tapes contained English language Library of Congress catalogue records that were formatted in MARC I. During the pilot project, the Library of Congress converted 35,000 records. Some of the libraries that participated in the pilot project were able to use MARC records to automate some aspects of their library operations. Some of the pilot libraries, however, struggled with a lack of computer programming knowledge as well as a lack of experience with complex bibliographic data (Torkington, 1974).

The pilot project officially ended June 30, 1967, but distribution of records continued into 1968 (Avram, 1968). The Library of Congress decided that the pilot project was an overall success and began to work on the MARC II format in March 1967, while the pilot project was still being carried out. The MARC II format was developed based on feedback from libraries that participated in the pilot project. The Information Sciences and Automation Division of the American Library Association formed a Machine-Readable Cataloguing Format Committee to review the MARC II format (Avram, 1968). MARC II was designed to serve as a communication or exchange medium. The Library of Congress began general distribution of MARC II records in March 1969. Responsibility for creating MARC records was transferred from the Library of Congress' Information Systems Office to a newly created department called the MARC Editorial Office. At first, coverage was limited to American imprints, but this was later expanded to include current English language imprints. By the end of 1972, the MARC database contained more than 300,000 records, and projects to develop MARC systems began in several other countries including Great Britain, France, Italy, West Germany, the Netherlands, and Japan. The development of the MARC format laid the foundation for libraries to share bibliographic data. Databases and services were subsequently created to support that sharing.

8.1.3 Shared Cataloguing

The Ohio College Association hired Frederick G. Kilgour in 1967 to establish the Ohio College Library Centre (OCLC), which was the world's first computerized library network. In 1971 OCLC introduced a shared cataloguing database, now called WorldCat, to support 54 academic libraries in Ohio. This online cataloguing system allowed libraries to achieve dramatic cost savings by sharing bibliographic records. One library could create an online bibliographic record and other libraries could use that same record to create cards with local information for their print catalogues. The Alden Library at Ohio University increased the number of books it catalogued by a third and simultaneously reduced its staff by 17 positions in the first year of use.

Word of this increase in efficiency spread, and the network quickly expanded to include libraries from all 50 states and around the world.

8.1.4 Online Public Access Catalogue (OPAC)

In 1975, Ohio State University Libraries installed computer terminals in its main lobby so that patrons could directly search its library control system without help from a librarian intermediary. The library control system became one of the early online catalogues. The catalogue was searchable by author, title, author and title, call number, and Library of Congress subject headings. There was also a computerized shelf list that patrons could browse. Most of the library systems that were available in the 1970s performed a single function, such as circulation, and this information was also made available to library patrons.

Computer-output-microform (COM) catalogues were another alternative to the card catalogue that developed as a result of shared online cataloguing. Libraries that used these catalogues generally had large collections (over 25,000 volumes, with a growth rate of at least 1,000 titles per year), needed the catalogue in at least 20 locations, and were having difficulty managing the logistics of maintaining a card catalogue because of the large volume (Boss & Marcum, 1980). COM catalogues enjoyed only a brief period of popularity due to patrons' clear preference for online catalogues over microform. Online catalogues began to replace existing library card catalogues in significant numbers during the 1980's. A study of users' reactions to four of these systems indicated that the users preferred online catalogues to card catalogues (Moore, 1981). This clear preference led to further development of the online catalogue. Online catalogues provided more advantages to patrons than simply improved searching capabilities. These systems were integrated with acquisitions and circulation processing so that added information about on-order, in-process, and up-to-date circulation status information was available to patrons for the first time.

By 1989, 50% of all library systems purchased had a patron access catalogue that was implemented (Boss, 1989). Many card catalogue cabinets were discarded or sold. To ease the transition between card catalogues and online catalogues, online catalogues were designed to mimic the functionality of the card catalogue. Text-based catalogues were available remotely using the TELNET protocol, but only relatively sophisticated computer-using library patrons accessed library catalogues this way. That changed significantly with the advent of the World Wide Web.

8.1.5 Web-based Catalogues

Vendors developed Web-based versions of online public access catalogues to satisfy the demand of librarians, but these catalogues replicated text-based catalogues, which were in turn based on the card catalogue. Web-based catalogues, although presented through a graphical interface, relied on Boolean searching, which was "still a retrieval technique designed for trained and experienced users" (Antelman, Lynema and Pace, 2006, p. 128). Many libraries added catalogue records for Web pages, but it quickly became clear that it would be impossible for librarians to catalogue the Web in the way they had traditionally described print resources.

Did u know? Before librarians could fully respond to this new technology, the first Web search engines such as Aliweb, WebCrawler, and Lycos and Web directories such as Yahoo! were created.

Libraries became more selective about adding catalogue records with links to Web resources and focused more on electronic resources for which the library paid. Some libraries created catalogue records for individual titles in Web-based databases, only to find that database vendors'

title lists changed frequently, causing significant cataloguing backlogs and inaccurate links that were frustrating to users. Other libraries created html lists of electronic journals and databases rather than catalogue records. As databases and electronic journals proliferated, this task became a time-consuming chore. In response to both the need for catalogue records and what were often referred to as A-Z lists, vendors emerged that provided services that tracked the individual electronic journals from databases and supplied MARC records for libraries to load into their databases.

Self Assessment

Fill in the blanks:

1. Web-based electronic resources were widely available beginning in the mid ……………………

2. One of the major developments during the 1960's was …………………..

3. During the pilot project, the Library of Congress converted …………………… records.

4. …………………… was designed to serve as a communication or exchange medium.

5. Vendors developed Web-based versions of …………………… to satisfy the demand of librarians, but these catalogues replicated text-based catalogues, which were in turn based on the card catalogue.

8.2 Library Technical Services

Library Technical Services is responsible for acquiring and providing intellectual access to collections in all formats and in dozens of languages for the libraries. Library technical services are the processing and maintenance activities of a library's collection. These include:

- *Identification:* locating potentially worthwhile items to add to the collection.

- *Selection:* deciding which of the identified items to add to the collection.

- *Acquisitions:* securing the items for the collection.

- *Organization:* indexing and cataloguing the items acquired in a manner that will aid the end-user in locating materials in the collection.

- *Preparation:* labelling, binding, repairing, conservation, and otherwise making items ready for (and maintained during) storage in a manner that allows for easy retrieval and maintenance of what is in a collection.

Technical services may also include: maintenance of online catalogues, creation and maintenance of MARC records in the catalogue, labelling, covering, security processing, and/or distribution of materials, maintaining a library's technology resources, such as servers, OPACs, circulation, scanners, and other devices.

8.2.1 Library Transition Processes Suitable for Automation

Moving from the non-automated system into the computerized system will require both planning and long work hours from administration and staff. Ideally, community volunteers might be recruited to assist the process in moving quickly and efficiently, particularly in relation to data conversion. However, patron registration, installing software, staff training and system testing are probably best left to internal sources.

The goal of the transition process is to have the library's patrons and staff uses the automated system in the expected way. The transition process from a non-automated system (including non-barcoded books, due-date slips and complicated patron record-keeping procedures) to a fully automated system (all previous tasks are now computer-managed) is not a simple internal matter.

⚠

Caution For the public's benefit, attention must be given to the timeliness and veracity of the transition process.

There are three central elements to a successful transition: books, patrons and procedure. Hopefully, the books have been entered into the database, have a MARC record, and are barcoded, as covered earlier in Retrospective Conversion. The next step is to either convert patron files or 10 create patron files. Finally, the public and staff must be acquainted with the new system so that the system will indeed work in the expected way.

Once an approach has been chosen, movement towards the goal can be broken into three major steps:

lnstall Everything

- Physically prepare the site.

- Adapt the automated systems to the library's policies.

- Load the library's records into the system.

- Prepare systems and do preliminary testing. Evaluate actual performance. More formally, "benchmark" or do performance testing.

Train Staff and Adapt Work Procedures

- Identify people to be trained.

- Identify the activities in the new system that will require special training.

- Establish the required methods of training.

- Prepare any training programs that are to be run internally.

- Arrange a schedule for the training programs.

- Conduct the training programs.

- Review the results of the training programs.

- Deal with any unforeseen consequences of automation on library staff procedures.

Release Information to the Public and Establish New System

- Establish and publicly release a new system transition completion date.

- Acquaint public with new system, through one-on-one assistance, hand outs, press releases and/or class demonstrations.

- Load patron information and or register new patrons.

Self Assessment

Fill in the blanks:

6. Library technical services are the processing and maintenance activities of a ……………………

7. There are three central elements to a successful transition: ……………………, …………………… and procedure.

8.3 Process Automation

Process automation refers to the application of technology to previously manual activities performed by library staff. Process automation involves using computer technology and software engineering to help power plants and factories in industries as diverse as paper, mining and cement operate more efficiently and safely. In the absence of process automation, plant operators have to physically monitor performance values and the quality of outputs to determine the best settings on which to run the production equipment. Maintenance is carried out at set intervals. This generally results in operational inefficiency and unsafe operating conditions.

Process automation simplifies this with the help of sensors at thousands of spots around the plant that collect data on temperatures, pressures, flows and so on. The information is stored and analysed on a computer and the entire plant and each piece of production equipment can be monitored on a large screen in a control room.

Did u know? The most important tool you have when you are developing an automated library system is your MARC load table. Know it, love it, and it will take care of you. Today's automated library systems look easier to use than their predecessors, but they still use MARC records (or should!) as the building blocks to create your bibliographic records.

The MARC load table controls the placement of information taken from MARC records as they enter your library system. If you purchase MARC records from a vendor, or have an output file of your MARC records from a previous system, you will need to load the records into your new library system. To load the records properly, you have to configure the library software product's MARC load table. Make sure your library software vendor explains the MARC load table in the new product so that you understand what it is and how to change it. If the vendor does not allow you to change it, make sure you have a contact person on the vendor's staff that can make changes for you. Different vendors set up the MARC load table differently, so make certain your vendor explains how your data are loaded and how to change the information if the current set-up does not suit your library's needs.

Be aware of localized information that you need to discuss with your library automation software vendor, such as branch library locations, satellite locations and sub locations within the main library collection, as well as call number prefixes or suffixes. These types of information are handled differently from one library automation system to the next.

Ask your vendor to tell you what you need to know about the process of setting up your automated library system in general, and your MARC load table in particular. Do not wait for them to bring the subject to the table. Their "out-of-the-box" MARC load table might be sufficient for loading your data, but you will find it much less painful to set the table up properly before the load than to attempt to fix problems after records have been loaded. Asking vendors to speak directly to each other on your library's behalf is frequently effective, if you feel that you

have not been able to convey pieces of information to and from your vendors. MARC records and MARC load tables are powerful tools, best used by those in the know.

8.3.1 Process Automation Technologies

Plant operating settings are then automatically adjusted to achieve the optimum production. Plant operators can manually override the process automation systems when necessary. In the past, mention of the term library automation almost universally triggered a discussion of library computer systems and software management packages. More recently, library managers have turned their attention to the issues involved with manual activities in the library and how these might be better performed by the deployment of specialised technology. Thus process automation in the library context usually refers to a strategy designed to remove the repetitive materials handling burden from human beings and to pass this burden to automated systems of various sorts.

8.3.2 Technology for Transporting Library Material for Processing

This area is mostly dominated by custom materials handling technology. Essentially, library items are transported from the location where they are dropped by the borrowers to a location – returns room or library workroom – where they will be processed. Sometimes smart return chutes and staff workrooms simply cannot be collocated. Often this equipment is installed between a dedicated returns machine and a sorting machine and consists of sections of conveyor belts and sometimes machines designed to move items vertically between floors.

Notes That some libraries have used this technology simply as a means of transporting library materials from point A to point B, with a manual process at either end. While existing library buildings can be retrofitted with transport technology, the process is considerably easier when planned as part of a new building or renovation. Most vendors of returns automation technology for libraries generally focus on developing the borrower returns interface and the sorting components and then partner with an external third party if transport technology is required.

8.3.3 Technology for Sorting and Shelving

While there are systems in existence for automated remote storage and retrieval of library materials, we can assume that the re-shelving of items in a traditional library with browsing facility will be accomplished for the foreseeable future by library staff. While domestic aid style bipedal robots might conceivably be able to perform this task in the future, that possibility is sufficiently remote that we can set it aside for the moment. However, for the sorting of library materials, there are many options available. These options range from simple two way sorts to complex sorters placing material directly onto shelving trolleys. In an attempt to put each category of equipment into perspective, we will consider them separately.

It is worth making the observation that, even with the addition of sorting, we still have the final manual step for the staff to complete before the items arrive back on the shelves. Also worth noting is that to automate the returns process while using equipment available today would require a capital expenditure somewhere in the order of two to five times that required to automate the loans process for a given library size.

> **Task** Distinguish between sorting and shelving.

Self Assessment

Fill in the blanks:

8. …………………… refers to the application of technology to previously manual activities performed by library staff.

9. Process automation in the library context usually refers to a strategy designed to remove the …………………… handling burden from human beings and to pass this burden to automated systems of various sorts.

10. It is worth making the observation that, even with the addition of sorting, we still have the final …………………… step for the staff to complete before the items arrive back on the shelves.

11. Library items are transported from the location where they are dropped by the borrowers to a …………………… – where they will be processed.

12. …………………… present a number of challenges to the traditional library operations and workflow that must be addressed in order to provide smooth management.

8.4 Electronic Resource Management

In this section we will addresses electronic resource management from the perspectives of planning, policy, and workflow issues experienced by libraries. Many libraries attempt to transfer and incorporate the print workflow onto electronic resource management. The result is a feeling of chaos and lack of control. Electronic resource management (ERM) is the practices and software systems used by libraries to keep track of important information about electronic information resources, especially internet-based resources such as electronic journals, databases, and electronic books. The development of ERM became necessary in the early 2000s as it became clear that traditional library catalogues and integrated library systems were not designed to handle metadata for resources as mutable as many online products are.

An overarching theme with electronic resource management is the rapid growth of electronic resources. Because of this growth libraries are experiencing issues related to time management, staffing, and the time-honoured task of deliberating the set-up of logical workflow systems for such resources. Unlike the traditional library workflow of ordering and paying for print resources, cataloguing those items, and processing them for the shelves – a workflow in which the different library units know their roles and responsibilities – most libraries consolidate all things electronic such as A-Z title lists, federated search engines, e-journals, abstract-and-indexing databases, dark archives and electronic resource management tools, and allow an electronic resources librarian to handle most, if not all, responsibilities from pre-order activities to access set-up and maintenance.

Electronic resource management may be defined in various ways. The definition may be as narrow as an A-to-Z list of serial titles, a focus on an approach to budget in various ways. The definition may be as narrow as an A-to-Z list of serial titles, a focus on an approach to budget management, or a broader concept like a content management system to create Web pages, provide administrative functions, and track license agreements.

While there is a great deal of literature devoted to various types of electronic resources, particularly to electronic journals, very little has been written about electronic resource management in a more holistic sense, with the exception of two books on the topic, or a broader concept like a content management system to create Web pages, provide administrative functions, and track license agreements.

8.4.1 Planning

Planning for electronic resources is perhaps the most important and least practiced activity in libraries. Electronic resources present a number of challenges to the traditional library operations and workflow that must be addressed in order to provide smooth management. The challenges faced by many libraries include operational issues such as the number of staff assigned to electronic resource management duties, staying in-step with technological and vendor changes in electronic resources, budgeting limited resources for the acquisition of resources, and communication with vendors and amongst librarians and administrators. Other challenges relate to access issues such as management tools like openURL knowledge bases, federated searching, catalogue records, and authentication. Staffing for electronic resources is perhaps the biggest challenge most libraries face.

The majority of libraries, regardless of total staff size, typically have only one or two professional librarians involved in electronic resource management. Paraprofessional involvement varied widely with one-third having no paraprofessional involvement, a tenth having more than five, and the rest having one to three paraprofessionals involved in the workflow. Some libraries address the challenge of limited staffing by distributing work among existing staff, prioritizing projects according to staff availability, and emphasizing the need to invest more staff time in the electronic resource environment. Others have developed a team structure to meet the staffing need, delegating specific tasks to paraprofessionals. Another common technique is to create a committee of individuals to examine choices for a particular resource, narrow the choices and present a limited set of options from which the library may choose. However, once a resource is chosen, the investigation often continues as libraries research alternatives and new technological developments for a given resource.

8.4.2 Policies

The development and use of policies is critical in electronic resource management and for communicating a library's goals. Policies set guidelines of practice that aid in electronic resource management (H. White, 2005). Aside from collection development policies, libraries need policies that address issues such as types of resources to support, licensing issues, and user access. Other policy topics include how and which resources should be catalogued, placed in a content management system or subject guide, or added to an ERMS. Staffing and time are one of the challenges that libraries face with policy development.

Caution Libraries indicated that the lack of sufficient staff requires all of their time for managing electronic resources and does not allow any time for the consideration and development of policies.

Change was also cited as a problem for policy development because vendors, products, and staff opinions are inconsistent and change too often. Decisions are often made when there is not an ideal solution, which causes the need to remake a decision after seeing how things work out or when the technology evolves to meet a library's needs. Communication is another barrier to

policy development, particularly because of the time required to educate other librarians on the issues. Respondents addressed policy challenges in differing ways. Less than half of the respondents have developed any particular policy, and most policies relate to electronic resource trials, inclusion of resources in the A-to-Z list, and the addition of resources with access restrictions. Some libraries create task forces to deal with policy development issues.

Others send emails with justifications for decisions, or simply deal with issues as they arise rather than creating and following a specific policy. The perceived impact of a lack of policies on electronic resource management was also varied. Some respondents see policy writing as cumbersome and time-consuming. Others felt that policies may be too restrictive or may make some management tasks more difficult. Still others feel that there is no way to create a universal policy or that their management practice is non-standard and therefore their policies would not be valid. Another impact of the lack of policy development responses was the pressure to keep up with peer institutions, which a policy might prohibit or even become meaningless if the administration does not buy into the policies.

While at times painful and time consuming, policy and procedure development are essential for electronic resource management. The time invested in the creation and writing of documentation will provide benefits now and in the future. A library that has a policy concerning the requirements of specific types of electronic resources can use that policy to eliminate investigation or consideration of vendor products that do not meet desired standards.

Example: If your policy states that only those resources that are openURL compliant will be added to your collection, then time can be saved by not adding non-openURL resources.

8.4.3 Workflow

Related to planning and policy development, workflow and the documentation of the workflow is a crucial aspect of electronic resources management. Some of the librarians indicated that they documented part or all of their electronic resource management workflow in order to determine what is not getting done. Others did so to create consistency, particularly in terms of requests from other librarians. Others found the documentation to be comforting to other employees, even if the workflow changed and made the documentation outdated. Some found documentation necessary to ensure each step is completed in a particular process, to better prepare for staff changes and leaves, or to begin a database trail. Still others believed documenting the workflow led to a better understanding of what is going on and improved communication of workflow tasks to others in the library.

While the reasons for documenting the workflow are numerous, several libraries perceived compelling reasons to not take on this task. Some believed the workflow is too cumbersome to document. Others work in libraries in which most electronic resource management is done on a case-by-case basis because there are too few common issues to make workflow documentation relevant. Some cited lack of time and personnel, while others indicated that the organizational culture precludes the documentation process (e.g., no one documents anything; cannot use the documentation in benchmarking; turf issues). Some also stated that the workflow is still undetermined and therefore cannot be documented.

Self Assessment

State whether the following statements are true or false:

13. Many libraries attempt to transfer and incorporate the print workflow onto electronic resource management.

14. The majority of libraries, regardless of total staff size, typically have so many professional librarians involved in electronic resource management.

15. Some libraries create task forces to deal with policy development issues.

Case Study

Identification of Problems Faced by University Libraries in the Process of Automation (Sri Lanka)

History of Library Automation in Sri Lanka

The Natural Resources, Energy and Science Authority of Sri Lanka (NARESA), currently known as the National Science Foundation (NSF) obtained a computer in 1983 for the use of the Sri Lanka Scientific and Technical Information Centre (SLSTIC). This can be considered as a historical event because this was the first computer set up in a library in Sri Lanka. NSF had to undergo a long process and meet problems to procure this computer due to the attitudes of decision makers, computer scientists and librarians towards the use of computers for library purposes (Yapa, 1998). Although the situation in Sri Lanka was such, during the 1980s, most Western countries automated their libraries rapidly. UNESCO developed CDS/ISIS by combining its own Computerized Documentation System with the Integrated Set of Information Systems of the International Labour Organization and there had been a rapid progress of library computerization activities in Sri Lanka after the introduction of CDS/ISIS in 1987 (Yapa, 1995). This software was, and is, distributed to libraries free of cost.

Automation of University Libraries in Sri Lanka

It was in the year 1986 that the first meeting of university librarians, Vice Chancellors and the then Chairman of University Grants Commission (UGC) was held to discuss any possibilities of automating university libraries (IUCL, 1987). The Inter University Committee on Librarians (IUCL) emphasized the importance of automating university libraries in order to be on par with the technology development taking place worldwide and brought out issues such as inadequate funds to purchase computers, software and insufficient trained staff etc. In 1991, UGC provided one microcomputer to each of the eight university libraries namely: Peradeniya, Colombo, Moratuwa, Sri Jayawardenapura, Kelaniya, Jaffna, Ruhuna and Open University (Dissanayake, 1995). UNESCO's freely available database software, "CDS/ISIS" was used by all the above libraries to enter cataloguing data. In Sri Lanka, as in many countries, CDS/ISIS has been used widely as money has not been available to acquire other software. Since then many library software packages (CDS/ISIS, Purna, LibSys, Lib Suite, Alice and ISURU) have been used by university librarians to automate the functions of the library.

Software Issues

Software and matters related to software play an important role in the process of automation of library functions. Information received on the software packages used for library automation shows that the UML was using LibSys software and the UCL was using Alice for Windows software. LIBSYS is a fully integrated multi-user library system incorporating the latest in information technology. LIBSYS, though a powerful system, is easy to operate. The library staff can begin to use it without prior programming or computer skills. It ensures high productivity because of minimal data entry requirements, maximum possible integration of functions and sophisticated search facilities. Built around its own centralized

Contd...

bibliographic database, based on MARC formats, LIBSYS supports all activities relating to acquisition, cataloguing, circulation and serials. Additionally, it provides for analytical indexing of journals, and an advanced user-friendly OPAC interface to access all library materials through a Web browser (LibSys Corporation, Undated). Alice for Windows is a complete, integrated library and information management system which provides powerful automatic document and resource control. This can be configured to give the most cost-effective method of document and resource management available and can be used to manage a wide variety of materials like journals, books, slides, audio and video cassettes, paper clippings, magazines, charts, maps, equipment, electronic documents, and World Wide Web sites. Alice performs all the tasks needed to manage a library. These can be divided into three broad activities:

- Recording of items

- Finding items

- Controlling the use of items

Modules in Alice are grouped into three sets: Standard modules, Advanced modules and Special modules (Softlink Asia Pvt. Ltd., Undated).

Problems in UML

Librarian of the UML replied that they get few problems after installing updated versions of the software. At the same time, the Head of the Reader Services Department said that they have difficulty to customize the software to suit the needs of their department. Head of the Periodicals Department was of the opinion that they have some problems in sending reminders to periodical vendors through the system. Head of the Technical Services Department mentioned that they face difficulties in printing catalogue cards, spine labels and barcode labels through the system since the software supports well only for Windows 98 operating system in printing above mentioned cards and labels. Head of the Acquisition Department replied that they have no other software problems.

Problems in UCL

Head of the Acquisition Department mentioned that they have problems in entering currency figures and they do not get warning messages when there is a duplication of records. According to the Head of Reader Services Department, report generation and retrieval were slow and it was a difficulty for them. Other respondents of the UCL said that they do not face any other problems in the software.

Questions

1. Discuss the automation of university libraries in Sri Lanka.

2. Provide solution for the problems in UCL

Source: http://www.cmb.ac.lk/academic/institutes/nilis.bak231210/reports/Dilroshan.pdf

8.5 Summary

- The use of electronic resources in libraries began with the development of the machine-readable cataloguing (MARC) format in the mid-1960, a full 30 years before the introduction of the World Wide Web and its subsequent ubiquity. Bibliographic databases became available at approximately the same time.

- Web-based electronic resources were widely available beginning in the mid-1990s. Libraries offered Web-based catalogues, bibliographic and full-text databases, electronic journals, and eventually electronic books through the Web.

- Electronic resources began to dramatically change the way patrons accessed library resources in the mid-1960s. The card catalogue, a standard fixture in libraries for a century, faced its demise. One of the major developments during the 1960's was machine-readable cataloguing (MARC).

- Library Technical Services is responsible for acquiring and providing intellectual access to collections in all formats and in dozens of languages for the libraries. Library technical services are the processing and maintenance activities of a library's collection.

- Process automation refers to the application of technology to previously manual activities performed by library staff. Process automation involves using computer technology and software engineering to help power plants and factories in industries as diverse as paper, mining and cement operate more efficiently and safely.

- Many libraries attempt to transfer and incorporate the print workflow onto electronic resource management. The result is a feeling of chaos and lack of control.

- Planning for electronic resources is perhaps the most important and least practiced activity in libraries. Electronic resources present a number of challenges to the traditional library operations and workflow that must be addressed in order to provide smooth management.

- Some of the librarians indicated that they documented part or all of their electronic resource management workflow in order to determine what is not getting done.

- Some believed the workflow is too cumbersome to document. Others work in libraries in which most electronic resource management is done on a case-by-case basis because there are too few common issues to make workflow documentation relevant.

8.6 Keywords

Catalogue: A list or itemized display, as of titles, course offerings, or articles for exhibition or sale, usually including descriptive information or illustrations.

CD-ROM: A CD-ROM a pre-pressed compact disc which contains data. The name is an acronym which stands for "Compact Disc Read-only Memory".

Electronic Journals: Electronic journals, also known as *ejournals*, *e-journals*, and *electronic serials*, are scholarly journals or intellectual magazines that can be accessed via electronic transmission.

Electronic Resource Management (ERM): ERM is the practices and software systems used by libraries to keep track of important information about electronic information resources.

Machine-Readable Cataloguing (MARC): MARC, which stands for Machine Readable Cataloguing, is the data format for library catalogue records, or *bibliographic* records.

Online Public Access Catalogue: An online public access catalogue (often abbreviated as OPAC or simply library catalogue) is an online database of materials held by a library or group of libraries.

Process Automation: Process automation refers to the application of technology to previously manual activities performed by library staff.

Sorting: Sorting is any process of arranging items in some sequence and/or in different sets.

8.7 Review Questions

1. What are electronic resources?

2. "Web-based electronic resources were widely available beginning in the mid-1990". Discuss.

3. Write short note on online catalogues.

4. Discuss about machine-readable cataloguing.

5. What is Online Public Access Catalogue (OPAC)?

6. Discuss about the computer-output-microform (COM) catalogues.

7. What technical services did library is providing?

8. Explain the library transition processes suitable for automation.

9. What is process automation?

10. Discuss the process automation technologies.

11. Explain the technology for transporting library material for processing.

12. State the technology for sorting and shelving.

13. Give a brief description of electronic resource management.

14. Explain the electronic resource management from the perspectives of planning, policy, and workflow issues experienced by libraries.

Answers: Self Assessment

1.	1990's	2.	Machine-readable cataloguing (MARC)
3.	35,000	4.	MARC II
5.	Online public access catalogues	6.	Library's collection
7.	Books, patrons	8.	Process automation
9.	Repetitive materials	10.	Manual
11.	Location – returns room or library workroom		
12.	Electronic resources	13.	True
14.	False	15.	True

8.8 Further Readings

Books Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

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Online links   hr.caltech.edu/policies/AUP.html

www.ifla.org/files/assets/acquisition.../Electronic-resource-guide.pdf

www.sciencedirect.com/science/journal/14649055

Unit 9: Library Automation in Circulation Section

CONTENTS

Objectives

Introduction

Objectives

After studying this unit, you will be able to:

- Define circulation work
- Identify circulation systems
- List circulation functions
- Explain the basic functions of computerised circulation subsystem
- Recognize the framework of computerised circulation subsystem
- Interpret computerised circulation operations

Introduction

Lending documents for home reading is a normal, regular and on-going activity of most modern service libraries. When hundreds and thousands of documents are on circulation among readers, it is necessary to design a system to operate and control the movements of documents in a library. The work of circulation has, therefore, to be planned and managed with efficiency.

Circulation work of a library involves a group of operations that are specific, repetitive and systematic. As a result automated circulation systems have been fairly successful from the early days of library automation. Such systems require minimum set of essential data for carrying out circulation activities and data may be captured in a variety of ways. Generally, circulation modules of Library Management Software (LMS) include the facilities meant for inter library loan (ILL), group library circulation (in case of branch libraries and common borrowing card for a group of libraries) and also provide options for the maintenance of library resources.

The primary responsibility of libraries to circulate books is to permits readers to borrow them for home reading. Circulation involves keeping records of books that are borrowed, to whom they have been lent, for how long, etc., in addition to a system of issue and return of books at the circulation counter. There are also provisions in a circulation system to get a bock renewed or to reserve a book for obtaining it on loan.

Policy decisions are also determined to define the borrowing privileges of different categories of members, i.e., what types of documents (textbooks, monographs, loose issues of journals can be borrowed by registered borrowers (students, faculty, researchers, management in University libraries) and the length of time for which the user may keep the borrowed material.

There are two popular and widely practised systems of issue and return of documents in libraries, known as Browne and Newark Charging Systems. These systems have evolved and developed over a period of time. After giving a quick historical background of charging systems, we will give you a detailed description of these two charging systems with their relative advantages and disadvantages. We also explain the types of records and files that need to be maintained for operating charging systems as well as statistical records to analyse the use of books.

All this work is usually handled by a separate division of the library. We will give you a description of the planning and management of the circulation divisions of a library. Certain miscellaneous jobs like maintaining controlling and gate register and property counter, fall under the supervision of this division.

You will see as you go through this unit that circulation work is routine and practical in nature. Therefore, the observation of the various jobs in real contexts in libraries, will give you a better and clearer picture of circulation work. This self-instructional unit provides useful background information to develop a more practical knowledge of all the routines involved in circulation work.

9.1 Circulation Work

Circulation work is the primary task of most modem service libraries. A collection of documents, thoughtfully and painstakingly built up as a library, is meant to be used and hence should not be allowed to idle on the shelves. In effect, every reader should find a book in the library useful to him/her and every book should have a user. Libraries, therefore, have introduced a service, by which books can be borrowed by users for reading at their own convenient time at their homes or at any place outside the library, or even within the library in research cubicles or in the general reading room. Such a situation however arises in university libraries or in libraries attached to archives or museums. There are certain categories of publications which, for security

Notes

or other consideration, are not allowed to be taken out of the library. In other words, books are allowed to circulate among readers.

Notes All jobs related to a method of borrowing books and returning them after use, creation and maintenance of relevant records and files, and so on are referred to, as circulation work.

We shall discuss the goals and scope of circulation work in the next two subsections.

9.1.1 Goals of Circulation Work

Circulation aims to maximise the availability of all library material to users and thereby optimise their use. The major concern of any circulation service is to perform this task with economy and efficiency. This means, adopting effective charging and discharging systems, and procedures of lending for all types of users with reference to the different types of documents. It also implies the formulation of policies that will serve to make library material optimally available to users while ensuring effective control of their movements.

Did u know? Archiving these goals through the circulation division of a library is a management objective.

9.1.2 Scope of Circulation Work

Circulation work includes:

- Registration of members,

- Lending, i.e., charging and discharging,

- Renewals, i.e., persons who seek extension of time for borrowed books,

- Recall, i.e., requesting a borrower to return a book,

- Holds, i.e., books that are reserved for a member that are already on issue,

- Notification, i.e., communicating with members on all the above, as needs arise.

The other activities of the circulation division may include additional lending services such as interlibrary loan and reserve book collections. As circulation counters are usually located close to the entrance/exit gates of libraries, the circulation division of a library may also control the gate register and the property counter.

Notes The exact range of circulation work, however, varies from library to library.

Self Assessment

Fill in the blanks:

1. There are two popular and widely practised systems of issue and return of documents in libraries, known as …………………… and …………………… Systems.

2. Circulation work includes……………………, i.e., charging and discharging.

3. As circulation counters are usually located close to the …………………… gates of libraries, the circulation division of a library may also control the gate register and the property counter.

9.2 Circulation Systems

A circulation system helps a library user in the use of books and other library material that have been sent by the technical processing division of the library to the maintenance division most effectively.

The components of circulation systems will normally include:

- a file of registered borrowers,

- a record of all loan transactions,

- a system of charging and discharging,

- a renewal mechanism for extending due dates for return of books, and reservation of books already on loan for members who need them.

In addition to these, the circulation division may be required to take responsibility for the shelving of materials, recording and maintenance of circulation statistics and protecting the collection to ensure its fullest long-term use. It also helps to remove any obstacles between the individual user and the library material.

9.2.1 Historical Development

The charging system which presently exists in Indian libraries has evolved over a period of time. From a simple register system of recording loan transactions, circulation systems have now evolved into sophisticated computer-based systems. A number of factors have contributed to this evolution and development. Firstly the concept of librarianship has shifted from excessive conservation and preservation of books to increased concern for public use of books. Secondly public library systems are fast developing. There has been a phenomenal increase in book collections which are accessed by a large user population. In fact, the development of charging systems is closely linked with the growth of public libraries. Therefore, it became necessary to develop more liberal set of rules and simplified procedures for the circulation of books.

Several types of systems were developed. We shall attempt a quick review of these systems, in four broad groups as given below:

- Register systems

- Card systems

- Semi-mechanical systems

- Automated systems

Register Systems

The earliest method of charging books for home use was a relatively simple one of writing the author, title and borrower's name in a 'Day book'. A 'Day book' was a register that recorded all daily transactions sequentially in a register. Later, this method was superseded by the `Ledger system' with separate pages for each registered borrower. Each borrower's transactions were recorded in his/her respective page. This avoided the tedium of searching through the `Day book' for a single entry.

Did u know? The 'ledger system' remained in use until the middle of the nineteenth century.

The disadvantage of both the 'Day Book' and 'Ledger' systems was the absence of a mechanism to locate the whereabouts of the books. A solution to this shortcoming was found in the 'Dummy System'. In this system a block of wood or cardboard about the size of an ordinary book was covered with sheet of ruled paper on the back of which was entered the number of the borrower, call number, title of the book and date of issue. The wooden dummy was filed on the shelf in place of the book that was withdrawn. This method eliminated the need for going through lists of names and titles to find a specific book. This method made possible, for the first time, to identify of both the borrower and the book charged out.

The next step forward was the development of the 'Temporary Slip System'. In this system, a slip is prepared at the time of issue of a book, with the particulars of the book such as the call number, author title, and the particulars of the borrower, i.e., name registration number, address, etc., and the date of issue. These slips are arranged at the counter either date wise, or by alphabetically in the name of the borrowers or the registration numbers of borrowers. These slips are either destroyed or given back to the reader as a receipt upon the return of the books. The main advantage of this system over the 'Dummy system' was that it kept the circulation record together at the circulation counter instead of scattering throughout the shelves. These temporary slips were later replaced by a permanent slip or a card for each book.

Card Systems

With the increase in the number of readers using libraries, it became necessary to devise some method of identifying both the book and the borrower. Thus the two card system, one card for the book and one for the borrower came into existence. First, identification cards were used, which were later substituted by borrower's card on which all book transactions were entered.

Notes Of the two card systems, two systems, namely the Browne and the Newark are popular and widely used even today in libraries, particularly in India.

We will discuss briefly these two systems.

(i) *Browne System:* Towards the end of the 19th century, Nina E. Browne devised a charging system which used pockets or envelopes for each borrower instead of cards. When a book was to be charged, the book-card was removed and placed in the borrower's pocket which bore the borrower's name, address and registration number. These borrower's pockets, each containing one book card were then filed under the date either by call number, author or title of the book under circulation. This system involved only a single operation to make books available. Although considered to be notable advance over the temporary and permanent slip system, it had one shortcoming there was no permanent record of the loan.

(ii) *Newark System:* Around the turn of the century (about 1900) a new system came into use, which utilised the borrower's card and book card to the best advantage. This new system was adapted by the Newark (New Jersey) Public Library, and soon became popular. The simplicity and flexibility of this system made it adaptable to both small and large public libraries. Its positive attributes include accurate files, conveniently located at the circulation desk by patron's name, due date and call number. It can also generate accurate statistical reports and accommodate different loan periods. The main disadvantages are the labour

intensive nature of the operations. It set the stage for associating patron information to items through the loan transaction and the eventual use of transaction numbers.

Semi-mechanical Systems

The next stage saw the replacement of human labour by machines when mechanical charging systems were developed, essentially most subsequent systems, involved the use of cards with pre-punched holes around the edges, one of which could be cut to indicate the date on which an item is due. The cards are arranged by call number in a single sequence. The insertion of a knitting needle through a given hole will allow all the books overdue for a given date to fall free of the bunch of punched cards. This system is characterised by inventory and date access but placed a greater burden on the borrower. A borrower had to write the borrower's name and address and the call number, author and title of a book borrowed.

The next system to be developed was the photocharge system. In this system microphotos were taken of the borrower's card, the book card and a sequentially numbered date of issue or date due slip. This due date slip contained all the necessary information about the book as well as the borrower. Nevertheless this also had many drawbacks as the availability entire information on loan transactions was limited to a roll microfilm which introduced major operations difficulties.

Automated Circulation System

For several decades now, ingenious librarians and library equipment manufacturers in western countries have designed circulation systems using the latest technology. The advent of the computer in the 1960s and microcomputers in the 70s and 80s radically altered ground rules. Now all sequences of encoded elements are possible and information on any management data can be derived. Important statistical data pertaining to collection use and library users can be obtained by manipulating the data accumulated in the circulation process. However library automation extends beyond circulation functions into the more integrated systems of cataloguing, acquisitions, decision support systems and virtually all other library operations.

Advantages of speed, the ability to manage large amounts of data, and the long term trends of increasing computer power and decreasing cost have attracted libraries to automated circulation. In the developed countries of the world, it is now possible for all but the smallest libraries to have access to and control their material through the current range of computers. The situation in India may not be as promising; however a slow process of change is taking place in at least the special libraries towards computerisation. The computers were expected to enter other types of libraries too by the next decade or so. An increasing number of university and college libraries already are to be moving towards automated circulation systems. The situation now seems to be quite encouraging.

Self Assessment

Fill in the blanks:

4. A .... helps a library user in the use of books and other library material that have been sent by the technical processing division of the library to the maintenance division most effectively.

5. From a simple register system of recording loan transactions, circulation systems have now evolved into sophisticated ....

6. A.................. was a register that recorded all daily transactions sequentially in a register.

7. The disadvantage of both the 'Day Book' and 'Ledger' systems was the absence of a mechanism to locate the .... of the books.

9.3 Circulation Functions

Circulation functions include:

- User registration,

- Charging and discharging,

- Control processes like renewals, recalls, holds, over dues and notifications,

- Library Additional lending operations like inter-library loan,

- Maintenance of records and statistics,

- Clearance,

- Miscellaneous functions like gate register, property counter, vigilance at entrance and exit gates, etc.

9.3.1 User Registration

An obvious first step in any circulation system is to register the users or borrowers. This is a time consuming and somewhat expensive procedure but mandatory for several reasons. This procedure establishes the potential borrower as a legitimate member of the library. Registration identifies the borrower as a member of the community in the case of public libraries or as an enrolled student or faculty staff member in a typical academic environment. This identification is necessary for the accomplishment of the controlling processes like holds, recalls, fines, etc. Apart from this, it also serves as a useful point for informing the clientele of the library policy and procedures. It is one of the initial contact points with the user community. Another important purpose of registration, particularly in the case of public libraries, is that it provides an accurate statistical description of the user population.

Registration Procedure

The registration procedure is fairly well standardised. The borrower to be is given an application form to fill. The application form may preferably be in a card form, so that the same is alphabetically filed to serve as an alphabetical registration record. The information usually requested is the name, address, telephone number, occupation, business address and telephone number. If it is a public library, the occupation, name, address and telephone number of a referee or a guarantor is sought. The signature of the applicant and the guarantor is also insisted upon.

College and university libraries grant borrowing privileges to all faculty, staff and registered students. The method of student identification differs among institutions. The student may be asked to show his/her identification card issued at the time of entry into the current academic session. Another alternative is to require the borrower to show his/her admission receipt. The third alternative requires the student to get the head of his institution or Department to countersign his application and in case of faculty or, administrative staff a copy of the appointment letter. It is important to establish the bonafides of the student or faculty. Registration enables the user to make use of the privileges of the library. The form of registration is directly influenced by the type of circulation system. The borrowing privileges of members are also indicated in the borrowers' register. Borrowing privileges refer to the types of documents that can be borrowed, the length of retention, recall right of the library, etc.

9.3.2 Charging and Discharging Functions

Circulation is an activity whereby library materials are lent to borrowers and records of such loan transactions are kept in an orderly way.

> *Notes* This is an important basic activity of a service-library. It is this service that brings users into direct contact with the operating system of the library.

Librarians have, therefore, spared no efforts in designing and developing efficient and economical charging systems to give borrowers excellent service. Not only it is necessary to provide efficient service to borrowers, but it is also crucial to maintain a reliable record of loan transactions to know where a book is at any given point of time. This is essential in all types of libraries but more so in academic libraries where certain titles are in constant demand.

An ideal charging system should therefore have the following capabilities – it should be able to:

- identify the books that are charged, i.e., be able to ascertain whether a book is in the library or out;

- identify the borrower of a particular book;

- identify when a book is due back in the library;

- measure the extent of use of books, i.e., provide a permanent record of the number of times a certain book has been circulated;

- indicate the extent to which a reader is making use of the library's borrowing facility, i.e., indicate the number and type of book a user has borrowed, etc.; and Indicate the number of books circulated per day and also other subject wise circulation statistics.

Did u know? There are three categories of records on which circulation control is based. These include: items of documents that are on loan; borrower's list with all details including books borrowed; time record linking the above two records.

The quality of operational competence is evaluated with reference to: speed, i.e., the issuing and returning of books should be earned out with speed without sacrificing efficiency; economy, i.e., the system should economise on staff, time, money, materials, plant and stationery; it's being foolproof, i.e., versatile in terms of identifying the whereabouts of a book; the smooth flow of traffic, i.e., no congestion at the counter at any time, a minimum backlog, i.e., all the filing should be done on the same day; and a minimum need for preparatory work.

A minimal circulation model is a set of procedures of record keeping with respect to only their category, i.e., records of the materials held by a borrower. A total or complete system is one that provides for all three categories of records. The earliest system, the 'day book' met the minimal circulation requirements of recording the transactions. The 'ledger' system was an improvement in that was a more orderly control of charges as opposed to the former. However this also did not provide for identifying the books borrowed. It was the 'dummy' system which provided for complete inventory control. Most of the later systems like Browne, Newark have incorporated features which meet most of the requirements directly but the rest only indirectly. It is only the computer based system that can meet all requirements.

9.3.3 Controlling Processes

The controlling processes further regulate the circulation of library materials. These functions include:

(a) *Renewals:* Renewals represent an extension of the loan period by recharging the same item to the same borrower. Some books are required by readers for a longer period for various reasons. Books may be renewed if there is no demand for the same book, as indicated by the reserves record. Books may be renewed by presenting the book in person or by telephone depending on the library policy. However renewal is allowed on condition that the book will be returned immediately if recalled.

(b) *Reserves:* The reserve procedure is also known as hold procedure. In this library materials already on loan are identified and held or reserved upon request for other patrons. A record is then made at the circulation desk that serves to identify the user making the request and the book in question. The next step occurs upon the return of the book. When the book in question is returned the charge record indicates that the book is now 'on hold' for another user. Such 'On hold' books are separated and a notification to the requesting patron is sent to the user who made the request.

In academic libraries, textbooks and other related materials are in great demand by the students. Due to paucity of funds or non-availability of the item, college and university libraries are not in a position to acquire multiple copies to satisfy the demand for the same books by several students. With fixed book funds, a balance has to be struck between multiple copies and ensuring equitable access to certain titles for all users for home use. Information regarding 'holds' for specific titles can also be used as an effective selection tool for `multiple copies'.

(c) *Recalls:* Another important controlling activity concerns circulation is recalls. As libraries often allow patrons to renew books on the condition that the item will be promptly returned if another patron later needs it. The activity of calling books back into the library so that they can be lent to the other person is known as recall. Thus, a request for a hold or reserve initiates a recall of a book on first loan or already renewed.

(d) *Reminders:* Sending regular reminders for overdue books is one of the most important jobs of counter staff Readers may not return books in time either for selfish reasons or due to forgetfulness. The library's inability to locate the book promptly and ensure availability may also prompt the readers to retain the books with them for a long time.

⚠️

Caution To avoid such monopoly of books by a few persons and to give every reader a fair chance to use these books, reminders should be sent at regular intervals.

A record of the overdue books, the concerned readers' name and address must be made regularly. Printed reminder forms may also be used. In college and university libraries help of faculty is also sought in making reminders more effective.

(e) *Fines/Overdue Charges:* It is a general practice in libraries to collect overdue charges/fines for books returned after the due date. The policy of fines/overdues is primarily a measure of control for the proper use of books. The policy, of overdues is mainly to dissuade the practice of cornering certain books in demand. This also results helps to enforce discipline. The fines activity is also closely related to the: charge and discharge activities. The amount of fine and the ways of cumulating fines varies and depends on the library's policy. The two most common are straight line (accumulation of a fixed amount per day), and sliding scale (accumulation of decreasing or increasing daily amounts. Fines are normally cumulative up to a certain amount per book and then stay at that maximum amount.

The procedure of collecting overdue charges is either by issuing regular receipts or by keeping a conscience box for this purpose. The procedure depends on the library policy. Considering the cost and time involved in issuing receipts some libraries prefer the conscience box method. A conscience box is a method by which the defaulter puts the amount of overdue charge in a locked box with a slit on top. The total collection for the day is taken out and entered in the cash book of the library.

All these control activities of recall, fines, etc., can be more complicated if multiple copies, multiple branches, multiple patrons, varied loan periods for different patron types, media types are involved. All these activities are dependent upon the library's ability to send notices to users. The proper functioning of the notification process largely depends on accurately maintained user registration files, clearly defined policies of loan periods and fines and finally the response of the user to the notice itself.

Self Assessment

Fill in the blanks:

8. The main advantage of this system over the .... was that it kept the circulation record together at the circulation counter instead of scattering throughout the shelves.

9. First, identification cards were used, which were later substituted by .... on which all book transactions were entered.

10. The application form may preferably be in a card form, so that the same is .... filed to serve as an alphabetical registration record.

9.4 Basic Functions of Computerised Circulation Subsystem

Computerised circulation subsystems generally perform a group of functions utilising three basic categories of information as a base. Apart from the issue and return provision, circulation module performs the following functions:

- To locate circulating:
  - ❖ Items on loan
  - ❖ Items reserved by user
  - ❖ Item at binding
  - ❖ Items being reprocessed
- To identify items on loan to a:
  - ❖ particular borrower
  - ❖ specific/category class of borrowers
- To record 'personal reserves' for items on loan but desired by another borrower and to issue alerting notice to the library staff on return of the reserved item by a borrower;
- To print recall notices for:
  - ❖ returning overdue items
  - ❖ renewing of items
- To arrange renewal of loan
- To notify to the library staff of overdue items and printing of overdue notices

- To calculate fines or overdue charges for generating:

  ❖ Printout of fine notices

  ❖ Receipts of fine records

  ❖ Printout of fine receipts

- To calculate and print statistical reports

- To extend provision for handling special categories of borrowers and special types of materials

- To generate and print gate pass and due date slips

- To act as decision support system for better circulation management

- To support various data capturing devices e.g. barcode readers, smart card and RFID equipment, and

- To extend facilities for ILL and maintenance activities

In summary we can specify a total of nine functional groups of activities performed by a circulation module and these are:

- Circulation control function to perform all charging and discharging activities at a workstation in real time;

- Hold processing function to enable placement of reservation on any title or item in the database;

- Loan period calculation function to determine automatically the loan period for each item at the time it is charged;

- Overdue processing function to automatically produce the appropriate notice when the selected criterion is reached;

- Cash management function to allow users to be billed automatically for recovering overdue charges and value of lost materials;

- Fiscal report generation function to record daily financial transactions including fines and fees levied, fines and fees waived and fines and fees collected;

- Transaction control function to block users who exceed overdue threshold (e.g. too many overdue items) set by library;

- User registration function to assign track and maintain borrower profiles; and

- Report generation function to produce lists, reports and statistics in relation with various facets of circulation management.

Self Assessment

Fill in the blanks:

11. …………………… refer to the types of documents that can be borrowed, the length of retention, recall right of the library, etc.

12. A …………………… model is a set of procedures of record keeping with respect to only their category, i.e., records of the materials held by a borrower.

13. …………………… represent an extension of the loan period by recharging the same item to the same borrower.

14. …………………… subsystems generally perform a group of functions utilising three basic categories of information as a base.

9.5 Framework of Computerised Circulation Subsystem

Library materials should be made available to users readily or as soon after the demand arises as feasible. Circulation systems are designed to support this primary activity of a library i.e. document availability. A circulation system records loan transactions to specify:

- What material is in the library stock or readily accessible on ILL;

- Which material is on loan, and from whom or where it can be retrieved; and

- When materials on loan will next be available in library for other users.

A computer based circulation system supports all these primary activities of circulation section and is quite simple in its basic concept. The transaction or loan database is the core of circulation system. This database comprises a series of records, one for each transaction. Each record includes a brief dataset that specifies details of the document (through document number), details of the user (through membership code) and transaction details.

Example: Date of issue and date of return are extracted from the system date and due date is calculated automatically.

In an integrated setup, the bibliographical details (e.g. author, title, edition, place and year of publication) of documents on loan are extracted from the catalogue database and the membership database is utilised for collecting user information. Accession numbers of documents are used as the key data elements in first case, whereas membership codes act as pointer to the member database in the second instance. Therefore, accession numbers and member codes must be assigned in such a way that they identify the documents and the borrowers uniquely. Error free capturing of these two important data elements is another essential requirement in computer based circulation subsystem.

Data-capture is generally based on barcodes, which are used to encode both accession numbers and member codes. These bar-coded data elements can be read through a portable light-scanning device (e.g. barcode reader).

Did u know? Some automation packages have also started utilising modern data capturing equipment's like RFID (Radio Frequency Identification), smart card etc.

Self Assessment

Fill in the blanks:

15. The transaction or loan database is the …………………… system.

16. …………………… is generally based on barcodes, which are used to encode both accession numbers and member codes.

9.6 Computerised Circulation Operations

Automated circulation management has been very successful since the beginning of library automation. There are obvious reasons for this:

- The operations to be performed are repetitive;

- The procedures to be followed can be described systematically;

- Circulation can be separated from other library operations;

- The bibliographic information used in such systems need not be extensive; and

- Information may be captured in a variety of ways.

The broad groups of activities necessary to manage automated circulation are discussed in the following sections.

9.6.1 Membership Management

This sub-module is basically meant to create and update membership records in a library. The work of this sub-module starts with the creation of master database, which contains details about member categories, institutes, departments, courses/designations and so on. Member enrolment and generation of outputs follow this step.

Master Database Creation and Maintenance Facility

It includes the creation of various master files necessary for membership management in particular and circulation management in general. The tasks of this subgroup are:

- *Category and Privileges Determination:* This will enable to assign category code, duration, membership charges if any, and to determine various privileges associated with the respective membership categories. The privileges include types of borrowing items, their issue and reserve periods along with overdue charges.

- *Institute File Creation:* It enables to create a master file of institutions by entering institute code, name of the institute and address.

- *Departments/Divisions File Creation:* It allows adding a department under institute by entering department code and its name, address etc. Some packages also allow creating course/designation master file under each department. This option is particularly helpful for academic libraries.

- *Calendar:* It is meant for developing library calendar by entering list of holidays as per the calendar of events of the parent institute. It helps to automatically shift the date of return on a working day, if it falls on a closed holiday. This will also take care of calculating overdue charges accordingly.

- *Member Enrolment Facility:* This facility is meant to create and update membership records in a library. It includes:

  - *New Membership Record Creation:* It is to enrol members to the library by entering members personal information viz. last name, first name and middle name, type of membership (selected from master database), membership status, category of member, name of department/division, institute and course (if applicable) and contact number, address etc. Membership code may be generated automatically or entered manually into the database. Member ID will be used at various places like identity card, reminder and document transactions.

  - *Modification of Membership Record:* It is required for editing or updating a member's record using members ID or code.

  - *Deletion of Membership:* This facility will enable the library staff to delete membership either group wise or single at the end of membership period. This step requires the clearance of all dues for each individual member of the group.

❖ *Renewal of Membership:* This provision is required for renewing the date, when the validity of membership expires.

Output Generation Facility

This facility allows:

- searching of membership details against name or member ID;

- generation of 'No-Dues' certificate group-wise or single at the time of membership termination; and

- generation of membership ID card and printing before distribution. It includes the production of barcoded member ID required for barcode based circulation works.

9.6.2 Transaction Management

Transaction sub-module includes all the day-to-day activities of circulation section of a library viz. issue, return, renewal, reservation, reminders for overdue books, searching document availability and listing of items issued to a member. The details are as follows:

- *Issue/Check-in:* To issue a document, accession number of that document is to be entered either manually or by using a data capture device. It will display bibliographical information of the document along with its status (whether available for issue or reserved). The next step is to enter member code of the borrower. It will show details of the member along with category, number of documents issued against the member and overdue charges etc. The library staff can then issue the document by selecting appropriate option. The system after checking various parameters settled by the library will generate appropriate message along with date of issue and due date of return. This sub-module generally supports extension of due date, if required.

- *Return/Check-out:* This facility is meant for receiving back the documents lent out to users. The work starts with entering accession numbers of returned document. It will display the status of the document and the details of member who borrowed that particular book. The libraries staff may then mark return the document by clicking necessary option. If the book has been returned within due date a successful return message will be displayed. In case of late return (after due date) the system will be asking for fine collection by generating a fine receipt form.

- *Renewal:* This is meant for issuing a document to the same member again by renewing the transaction record. Due date gets changed automatically in the process. The renewal process will be successful, if someone has not reserved the document.

- *Reservation:* It supports booking of already issued document for a member. Reservation facility is programmed to generate message after returning a reserved document. The reservation process also allows change of reservation priority and cancellation of reservation, if required.

- *Recall:* This facility is useful if the document issued needs to be recalled and a reminder is to be sent to the member. It allows printing of recall letters and storing of letters for record.

- *List of Document Borrowed:* This facility helps to display details of documents borrowed by a member and information about overdue charges etc.

- *Document Availability:* Circulation staff has to search sometimes details of the document for checking of bibliographical information or document availability. This facility provides a link to the OPAC module from the transaction sub-module in an integrated architecture.

9.6.3 Reminder Generation

This facility is meant for generating reminders for overdue documents:

- To a group of members;

- To individual members;

- For a particular due date; and

- To all.

9.6.4 Maintenance

This sub-module is generally attached with circulation module for recording information about lost documents, documents sent for binding, damaged documents, missing documents and documents withdrawn from library.

Task   Find out the resources of library reference desk.

Self Assessment

Fill in the blanks:

17. A systematic organisation of activities related to this sub-module will give us …………………… subgroups of facilities.

18. …………………… includes all the day-to-day activities of circulation section of a library viz. issue, return, renewal, reservation, reminders for overdue books, searching document availability and listing of items issued to a member.

Case Study   **The Status of Library Automation in Pakistan**

Because of its outstanding efficiency, performance and ability to handle large volumes of documents, the computer is gaining popularity in the field of librarianship and information services. Many library and information routines are being performed proficiently by computers. The computer has proved its success in the fields of library acquisition, cataloguing, classification, circulation, serials control, and information storage and retrieval activities. Many new services like SDI and current contents service have been initiated with the help of the computer. Library automation has become a burning issue, with pros and cons, among librarians throughout the world. We cannot mention present library literature or any conference without a reference to library automation. The history of library automation is not a long one. It dates back to the 1950s and 1960s in America and Europe. In Pakistan, library automation was introduced in the 1980s and a number of libraries were computerized during or after 1987. The library literature in Pakistan does not provide much information about the current status of library automation in the country, although a few articles have been published. In this regard, our alumni Mumtaz Ali Anwar, Sajjad-ur-Rehman and Abdus Sattar have presented an introduction and basic guidelines for librarians wishing to automate their libraries, with special reference to

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Pakistan. Bushra Riaz, in her article, has discussed the problems faced by library automation in the country. In addition, other librarians have narrated their personal experiences in their individual libraries in different issues of the PULSAA and PLA newsletters. Library automation has multifarious aspects to be discussed but this study is limited to the status of library software and library automation training in Pakistan.

Library Software

What is software? Basically, software is the program that runs the computer to produce the required results. It is, in fact, the most important component of the automation process. Someone said, "A computer without software is similar to a man without his brain, or a library with neither books nor librarians". Therefore, on principle, the selection of software comes before hardware. When we talk about library software, we mean the software needed for library housekeeping routines and information retrieval services. Hundreds of library packages have been developed and run successfully in advanced countries and there are many directories and other tools available that help librarians to select suitable software for their libraries. But the situation in Pakistan is disappointing. Very few attempts have been made in the country. The question is, what are the hurdles and obstacles to a progressive situation and how can these hurdles be removed? It is an accepted fact that we are an under-developed nation without necessary resources. With meagre budgets, our libraries cannot afford the cost of library automation as a whole. With only 26 per cent literacy, there is a lack of institutions for research and, because of our poor education system, students and teachers do not consider the library a necessity.

Our librarians are not trained in library automation as library schools in our country do not prepare their students for this challenge. Some schools have included the subject of library automation in their syllabi but there is no facility for practical knowledge of computerization. Because of computer illiteracy, librarians hesitate to automate their libraries and, if they have to do so, they cannot play an active role in the automation process. People do not appreciate the requisites of library automation like system analysis, consultancy, staff training and equipment maintenance. Another problem is the growing trend of software piracy in the country. No software developed abroad is suitable for our libraries. Libraries that have been automated in the country have worked individually without having the benefit of the others' experiences. As standard library software is non-existent in Pakistan, library co-operation, which is one of the remarkable achievements of automation, is becoming extinct with the passage of time. Pakistani libraries mostly use microcomputers. So, it will be useful to introduce briefly some database management systems for microcomputers being used in the country.

dBase

A number of libraries in Pakistan have developed their in-house library databases using dBase, dBase III+ (introduced in 1985) and dBase IV (released in 1989) are mostly being used. It provides an opportunity for relational databases, utilizes less free memory, offers keyboard macros and password protection and can be run on local area network.

Foxpro

Following dBase, Foxpro is making inroads in Pakistani libraries. It is an application development dBase-compatible relational database package. It offers more facilities than dBase and is characterized by quick performance.

INMAGIC

INMAGIC is used successfully in Lahore University of Management Sciences (LUMS), NWFP Agricultural University, Peshawar and some other agricultural libraries in the

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country. The software was originally developed for minicomputers in 1980. Since 1983 it has been available for use with IBM PC and compatible machines. The package is powerful, flexible and relatively easy to use. Data are stored in variable length fields and each field may be repeated, which fulfils requirements for multiple authors, subjects, etc. in a bibliographic database. Fields may be indexed by keywords, term or both for quicker and easier retrieval. Boolean operators (and, or, not) may be used to broaden or narrow the search. Comparison operators (greater than, lesser than, equal to) may be used in term searches. Searches may be stored and later recalled or modified. INMAGIC offers output of search results on screen, to the printer or to an ASCII file on disk. Field-wise sorting and sub sorting are available.

CDS/ISIS

A number of libraries in Pakistan are working on CDS/ISIS. The range of ISIS users includes all types of libraries. ISIS was developed by UNESCO and is being distributed free of charge. More than 5,000 libraries are licensed users worldwide. It is a non-numeric database specially designed for bibliographic records, and is multilingual. A database can hold 16 million records. It provides variable length fields, repeatable fields, and sub-fields. It has powerful indexing and searching techniques. It provides a stop word file. Advanced programming can be done in the PASCAL language. Data can be exchanged according to international standard ISO 2709. It can be run on local area networks. Well elaborated documentation is available. Its latest version 3.07 was released in December 1993. Although CDS/ISIS cannot perform all housekeeping operations easily, its use is rapidly increasing in the country. Various journals publish regular columns on the development in CDS/ISIS. Five Pakistan Library Association computer training centres offer regular courses on CDS/ISIS and hundreds of librarians have become trained users.

Library Automation Training in Pakistan

The most important people in making library computerization successful are librarians. They know their job well and should be most qualified to decide which function should or should not be computerized. It must be realized that librarians will not be able to make any use of computer equipment until they are provided with the know-how required to use it. So, before providing the equipment, it is necessary to make training arrangements for the professional development of librarians. In the first two or three years of library automation in Pakistan, a few librarians have been able to develop an acquaintance with the computer either through training abroad or by working with foreign consultants. Self-education was another method used by a small minority.

Library Schools

There are six library schools in Pakistan which offer postgraduate courses on library and information science on a regular basis. It is their duty to keep their syllabi up to date with changing concepts in the profession. With regard to library automation training, the condition of library schools in the country is disappointing. The University Grants Commission (UGC) presented a revised curriculum in 1991 but unfortunately no library school implemented it. Another problem is that there are not adequate hardware facilities for training the students. The school at Karachi was first to have a computer, followed by the school at Peshawar. Punjab University succeeded in having the maximum number of four computers. NLDP also donated one computer to each library school last year, but the existing facility is still insufficient.

Professional Associations

With the emergence of library automation in the country, professional library associations showed an immediate response and took it as a challenge. After its revival, PULSAA

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arranged the first short course on the use of microcomputers in libraries in August 1989. The participants evaluated the course as excellent. PULSAA also arranged two other courses in 1990 and 1993 in which training on CDS/ISIS was emphasized. The PLA (Headquarters) arranged a ten-day workshop on "Computer introduction, application and data management in libraries" in October 1991 at Lahore. Librarians at Multan have also conducted a course with the sponsorship of NLDP. Fifteen librarians were trained in DOS and Word-perfect.

PLA Computer Training Centres

With the help of NLDP, the Pakistan Library Association has established five permanent computer training centres at Islamabad, Lahore, Karachi, Peshawar and Quetta. The cases for Hyderabad and Bahawalpur are under consideration. The first PLA centre started functioning in November 1992 at Lahore. By the end of June 1994, PLA centres in the country had trained 500 librarians and other people in library automation. The courses include "Fundamentals of computers", "Disk operating system (DOS)", "Word-processing using MS Word and Word-perfect", "Spreadsheet using Lotus and Quatro Pro", "Database management using dBase", and "Library automation using CDS/ISIS and LAMP". A special one-month course was also designed with the help of USIS at all the centres. The course was conducted by Dr Nelson, a library automation expert from the USA. At Lahore, to make students well-versed in a working automated environment, visits to automated libraries in the city have also been made an integral part of the courses.

Questions

1. What efforts have been made in the field of library software?

2. Why very few people have been trained well in library computerization?

3. What role does PLA computer play in the selection and development of suitable library software?

Source: http://www.academia.edu/1187803/The_status_of_library_automation_in_Pakistan

9.7 Summary

- Circulation work of a library involves a group of operations that are specific, repetitive and systematic. As a result automated circulation systems have been fairly successful from the early days of library automation.

- Circulation work is the primary task of most modem service libraries. A collection of documents, thoughtfully and painstakingly built up as a library, is meant to be used and hence should not be allowed to idle on the shelves.

- Circulation aims to maximise the availability of all library material to users and thereby optimise their use. The major concern of any circulation service is to perform this task with economy and efficiency.

- A circulation system helps a library user in the use of books and other library material that have been sent by the technical processing division of the library to the maintenance division most effectively.

- The charging system which presently exists in Indian libraries has evolved over a period of time. From a simple register system of recording loan transactions, circulation systems have now evolved into sophisticated computer-based systems.

- The earliest method of charging books for home use was a relatively simple one of writing the author, title and borrower's name in a 'Day book'.

- The disadvantage of both the 'Day Book' and 'Ledger' systems was the absence of a mechanism to locate the whereabouts of the books. A solution to this shortcoming was found in the 'Dummy System'.

- The registration procedure is fairly well standardised. The borrower to be is given an application form to fill. The application form may preferably be in a card form, so that the same is alphabetically filed to serve as an alphabetical registration record.

- Circulation is an activity whereby library materials are lent to borrowers and records of such loan transactions are kept in an orderly way.

- A minimal circulation model is a set of procedures of record keeping with respect to only their category, i.e., records of the materials held by a borrower. A total or complete system is one that provides for all three categories of records.

- Computerised circulation subsystems generally perform a group of functions utilising three basic categories of information as a base.

- Library materials should be made available to users readily or as soon after the demand arises as feasible. Circulation systems are designed to support this primary activity of a library i.e. document availability.

- Automated circulation management has been very successful since the beginning of library automation.

9.8 Keywords

Barcode: A barcode is an optical machine-readable representation of data relating to the object to which it is attached.

Circulation: Circulation is an activity whereby library materials are lent to borrowers and records of such loan transactions are kept in an orderly way.

'Day book': A 'Day book' was a register that recorded all daily transactions sequentially in a register.

Interlibrary Loan (ILL): Interlibrary loan (abbreviated ILL, and sometimes called interloan, interlending, document delivery, or document supply) is a service whereby a user of one library can borrow books or receive photocopies of documents that are owned by another library.

Library Management System: Library Management System is software used to manage the catalogue of a library. This helps to keep the records of whole transactions of the books available in the library.

Renewals: Renewals represent an extension of the loan period by recharging the same item to the same borrower.

Reserves: The reserve procedure is also known as hold procedure. In this library materials already on loan are identified and held or reserved upon request for other patrons.

Temporary Slip System: In this system, a slip is prepared at the time of issue of a book, with the particulars of the book such as the call number, author title, and the particulars of the borrower and the date of issue.

Transaction Sub-module: Transaction sub-module includes all the day-to-day activities of circulation section of a library viz. issue, return, renewal, reservation, reminders for overdue books, searching document availability and listing of items issued to a member.

9.9 Review Questions

1.   What is circulation work? Also discuss the goals of circulation work.

2.   Explain the scope of circulation work.

3.   Write down the meaning of circulation system.

4.   What is the disadvantage of 'Day Book' and 'Ledger' systems?

5.   Briefly explain the two card systems.

6.   "Controlling processes further regulate the circulation of library materials". Elaborate.

7.   What are the primary functions of a computerised circulation subsystem?

8.   Write down the functions related to overdue management.

9.   Describe the file system of circulation module.

10. Explain the barcoded circulation system.

Answers: Self Assessment

1.	Browne, Newark Charging	2.	Lending
3.	Entrance/exit	4.	Circulation system
5.	Computer-based systems	6.	Day book
7.	Whereabouts	8.	Dummy system
9.	Borrower's card	10.	Alphabetically
11.	Borrowing privileges	12.	Minimal circulation
13.	Renewals	14.	Computerised circulation
15.	Core of circulation	16.	Data-capture
17.	Three	18.	Transaction sub-module

9.10 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Notes

Online links   journal.unaab.edu.ng/index.php/theses/thesis/view/2682

www.sljol.info/index.php/JULA/article/download/311/354

www.webpages.uidaho.edu/~mbolin/adegbore.htm

Unit 10: Library Automation in Periodicals Section

Objectives

After studying this unit, you will be able to:

- Summarize the meaning of periodical

- Identify the types of periodicals

- Discuss about the periodical index

- Recall the periodical literature

Introduction

Periodical is a term used for publications which come out "periodically," on a predictable basis. Generally they are purchased on a subscription basis and they include newspapers, magazines and journals. Periodicals are materials that are published continuously on a regular basis, whether daily, weekly, monthly, quarterly, or otherwise. Newspapers, magazines and journals are periodicals. Most periodicals are in print form, and may have an Internet version with some or all of the articles available online. An increasing number of legitimate publications are being published as electronic journals, with no print counterpart.

10.1 Meaning of Periodical

Periodical is a publication that appears on a continuous and predictable schedule. Examples include newspapers (daily or weekly), magazines, and journals. A periodical is an on-going publication with a distinctive title, which comes out in issues at regular intervals e.g. daily, weekly, fortnightly, monthly etc. Each issue of a periodical contains articles, which are written by different authors. The information is generally more up-to-date than in a book. Included within the definition of periodicals are journals, magazines, serials and newspapers. Journals are refereed, which means that articles submitted for publication go before a panel of experts i.e. peer-reviewed, before being accepted for publication. They are academic in content and reflect current thinking and research. Magazines are not refereed, are less academic in content.

10.1.1 Periodical: Journal, Magazine, Newspapers

Periodicals (Librarians call them "serials") come in a variety of styles and are published for a variety of audiences. They offer news, opinion, commentary, scholarly analysis, literary criticism, and reports of research. All periodicals are published at more or less regular intervals, from daily newspapers to semi-annual journals. You must make active choices about the types of periodicals needed for a given research project. Magazines and newspapers may be appropriate for some purposes, journals of opinion for others, but usually the most important sources for research papers are academic journals. Many of the different kinds of periodical require different citation styles.

- **Journals**, also called academic journals or scholarly journals, differ from other periodicals in several respects. Journals provide a means of communication among scholars and other experts. Scholars use these publications to report research methods and findings to their peers. Most are published by learned societies and professional organizations, and many do not accept advertising. Scholarly journals typically have a thorough review process in which other experts read and comment on the research being reported in order to ensure a high standard. This type of review is seldom used for magazines and newspapers.

- **Magazines** are written for general readers. They are published once a month or once a week, more frequently than scholarly journals. Magazines such as *Time* or *Newsweek* appeal to a general audience and offer news and opinion, while others such as *Car and Driver* focus on a particular interest or hobby. Because the purpose of most magazines is news or entertainment, the articles are not researched or documented to the same degree as scholarly journals. They are good sources of current news and opinion, as well as information on a specialized subject.

- **Newspapers** are also intended for general readers. Major newspapers are published daily, creating a very good record of events as they unfold. However, the frequency of publication often means that articles lack the research and documentation found in scholarly journals and some magazines. Their regional emphasis can make them ideal sources of information for events or topics of local interest, such as salmon fisheries in the Pacific Northwest.

The *New York Times*, a well-respected newspaper, serves as the *de facto* national newspaper and is a good source of information on topics of national and international importance.

Table 10.1: Examples of Periodicals

Types & Examples	Audience & Use	Watch for	Method of Access
Newspapers: New York Times Times (London) Times Picayune Wall Street Journal Mobile Press Register	Current information; journalists & freelance News stories, features Editorials, Sound-off, Letters to the Editor Texts of speeches, etc. Local or Geographic area focus	Month and Date – Sept. 30, 2008 Section and page numbers – pB25 Editorials, Letters, Sound-off Syndicated Columnists	LexisNexis Ebsco's Newspaper Source Proquest's Ethnic NewsWatch Proquest's Newspapers Mobile Register Some newspapers are on the public web
Magazines: Southern Living Working Woman Modern Maturity Personal Computing	Minimal reading level; staff and freelance writers Focused toward specific consumer groups Feature stories, Recipes, tips, how to... Lots of advertising, Personal stories, How-To, Cover Stories, Reviews	Weekly or Monthly Date, Page numbers Sometimes Volume and Issue Lots & lots of ads Brief articles, photos	Local Public Library Ebsco's MasterFile Premier InfoTrac's OneFile InfoTrac's General Reference Center Gold
News Magazines: Time Newsweek Maclean's (Canada)	Non-technical language Current events, Feature stories, public opinion polls Photographs, graphs, book & movie reviews Politics and contemporary issues	Weekly or Monthly Date, Page numbers Sometimes Volume and Issue Lots of advertising	InfoTrac's Expanded Academic ASAP InfoTrac's Business Index Ebsco's Academic Search Premier
Popular Magazines of Opinion: New Republic National Review Christian Century Christianity Today	Generally Educated Audience Particular viewpoint or agenda Commentary, Editorials, Letters Book, movie reviews, interviews News articles with a slant	Weekly or Monthly Date, Page numbers Look like news magazines, but have a particular political, religious, or other ideological bias Columnists	InfoTrac's Expanded Academic ASAP InfoTrac's OneFile InfoTrac's Reference Center Gold Ebsco's Academic Search Premier Ebsco's Masterfile Premier
Professional Trade Journals: Adweek Progressive Grocer Modern Plastics Hardware Age Aviation Week	Written for practitioners Practical articles; how- to, vocational info Current trends and practices Product information and ads Meetings, job ads, personalities	Weekly or Monthly Date, Page numbers Sometimes Volume and Issue # The title usually indicates a profession photos, ads	Ebsco's Business Source Premier Ebsco's Vocational Search Ebsco's MasterFILE Premier LexisNexis

Academic Journals: Psychobiology Journal of Popular Culture Nursing Management Studies in Short Fiction Journal of Marriage and the Family	**"Peer-reviewed" or "refereed"** Technical language of the field Often non-profit, Reports of original research or thought Literary criticism, Case Studies, Literature reviews, methods, results, discussions Charts, graphs, tech. drawings,	Always year, volume and issue # Sometimes season Usually 4–6 times a year Long articles and bibliographies Difficult language, No advertising, few pictures	InfoTrac's Expanded Academic ASAP (click on "to refereed publications") Ebsco's Academic Search Premier (click on "peer reviewed") Other specific disciplinary indexes like PsycInfo, Science Direct, ACM Digital Library. (see complete alphabetical list under "Articles, Indexes, Databases")

10.1.2 Periodical Collection

The Library subscribes to a comprehensive range of periodicals. Some of these are in print format, while an increasing number of periodicals are available electronically and are known as electronic journals. The electronic journals are accessible from the Electronic Journals page. These are shelved in alphabetical order by title of the periodical within four collections:

- Arts
- Science and Engineering
- Social Science
- Theology

Where a print title is also available electronically, this is indicated by the letter E against the title tag.

Notes Please note that only some back issues are available electronically.

10.1.3 Locating and Borrowing Periodicals

The library catalogue lists all print and some electronic journals held by the Library. It is accessible from all PCs in the Library and any PC with internet access. In order to find articles about a specific topic, you will usually search Library databases or abstracting and indexing services by topic.

While a number of electronic journals are not listed on the library catalogue they are accessible from the Electronic Journals page. The listing allows you to access an article by following links from the title to the full-text of the article.

Did u know? A guide to electronic journals is available online.

To locate a specific article, you should know:

- periodical title
- volume number and issue number in that volume

- author and title of article

- date the article was published

- page number(s) of the article

⚠

Caution Remember to use the Library Catalogue and the Electronic Journals List to ascertain whether or not the periodical you want is in the Library's physical or electronic collections.

If the library does not subscribe to the periodical you need, you may request a copy of the article that you need through Document Delivery Services.

Self Assessment

Fill in the blanks:

1. A .... is an on-going publication with a distinctive title, which comes out in issues at regular intervals e.g. daily, weekly, fortnightly, monthly etc.

2. All periodicals are published at more or less regular intervals, from daily newspapers to .... journals.

3. The .... are accessible from the Electronic Journals page.

4. While a number of electronic journals are not listed on the library catalogue they are accessible from the ....

10.2 Types of Periodicals

There are five types of periodicals:

1. Scholarly and Research Journals

2. Professional Magazines and Journals

3. Magazines and Journals of Commentary and Opinion

4. Popular Magazines and News Magazines

5. Newspapers

Let's examine each.

1. *Scholarly and Research Journals:* Specialized publications intended for scholars and students of a particular discipline or subject. Usually published monthly or quarterly, these publications often have words such as these in their title:

    ❖   Studies in

    ❖   Review

    ❖   Annals

    ❖   Quarterly

    ❖   Journal

    ❖   Advances

Example: Here are some examples of scholarly journal titles:

- Studies in European History

- American Historical Review

- Annals of Internal Medicine

- Quarterly Review of Film Studies

- Journal of the American Medical Association

- Advances in Biochemistry

Caution A periodical that has the word "journal" in its title is not necessarily a scholarly journal. For example, Ladies Home Journal is not a scholarly journal, even though the term appears in its title.

Figure 10.1: Journal of Health Policy, Politics, and Law – A Scholarly Journal
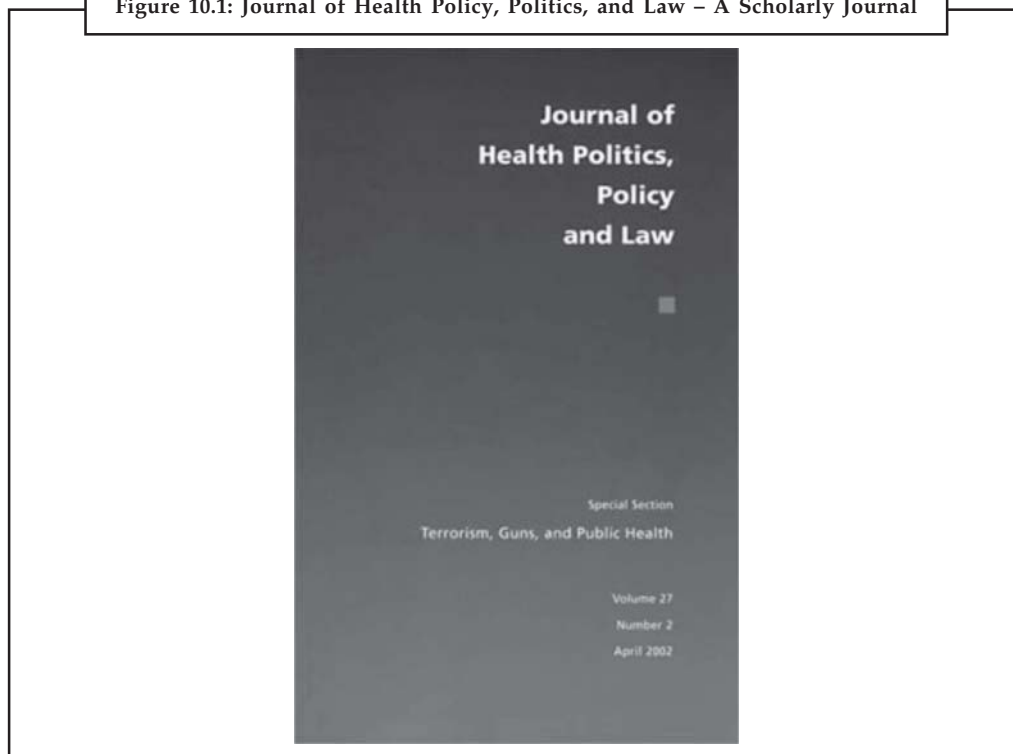
Source: http://www.smccd.net/accounts/wolbers/lsci100/lesson6_2.htm

Articles in scholarly journals are written by highly educated people (often holding Master's or PhD degrees) who are often experts, practitioners and teachers in specialized academic fields. They write articles as a way to communicate with other scholars and add to the knowledge base of their discipline, always carefully citing their sources in footnotes and/ or bibliographies. Often, they are reporting the results of original research or experimentation.

Many scholarly journals will not publish an article until it has been reviewed by an editorial board to insure that it meets certain standards of scholarly quality. A publication

that requires this formal review is known as a refereed journal, and sometimes teachers will require you to find articles from such journals. (Another term for refereed journal is peer-reviewed journal). "Peer-reviewed" implies that one's scholarly peers review your work. Both terms mean the same thing.

Articles in scholarly publications can be challenging to read because they're not usually intended for the general public or those unfamiliar with the subject.

2.   *Professional Magazines and Journals:* Publications that report on news and developments in a particular profession, academic field, trade, or industry. Unlike scholarly journals, they do not publish original research. Instead, they concentrate on news and trends in a particular profession or industry.

Examples:

American Psychologist (covers the psychology profession)

American Music Teacher (covers the music teaching profession)

Legal Assistant Today (covers the legal assistant profession)

California Apparel News (covers the clothing industry)

Automotive News (covers the automotive industry)

PC Week (covers the computing industry)

Paper Trade Journal (covers a specific trade)

Figure 10.2: The American Journalism Review – A Professional Journal

Source: http://www.smccd.net/accounts/wolbers/lsci100/lesson6_2.htm

3.   *Magazines and Journals of Commentary and Opinion:* Offer analysis, commentary, and investigative reporting on social and political issues. These publications typically view the world from either a politically liberal, moderate, or conservative stance. They sometimes serve as the official "voice" of an activist organization.

Examples:

Liberal	Moderate	Conservative
Monthly Review	New Republic	CATO Journal
Mother Jones	Maclean's	American Rifleman
World Marxist Review	Economist	National Review
The Progressive		National Right to Life News

Figure 10.3: National Review – A Magazine of Commentary and Opinion
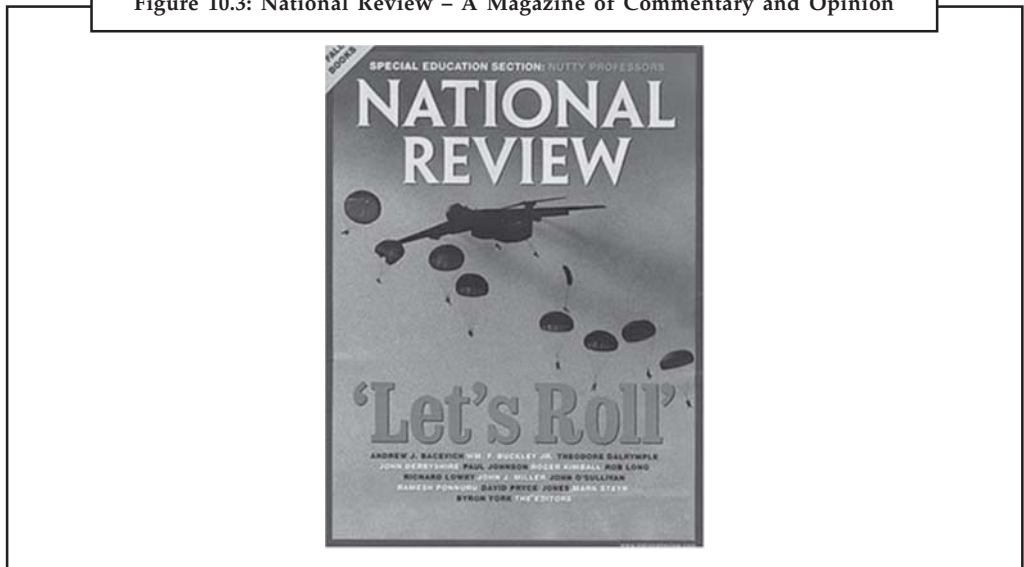
Source: http://www.smccd.net/accounts/wolbers/lsci100/lesson6_2.htm

4. ***Popular Magazines and News Magazines:*** Commercial publications intended for the general reader. Popular magazines focus on popular culture, i.e. entertainment, cultural trends, sports, hobbies, etc. News magazines report on national and international current events, social and political trends, public opinion, and popular culture. They often offer valuable explanations and interpretations of events both at home and abroad.

Figure 10.4: Vibe – A Popular Magazine

Source: http://www.smccd.net/accounts/wolbers/lsci100/lesson6_2.htm

Figure 10.5: Newsweek – A News Magazine

Source: http://www.smccd.net/accounts/wolbers/lsci100/lesson6_2.htm

5.   *Newspapers:* Daily publications that provide local, national, and international news, editorials, entertainment, advertising and other sorts of practical information.

Figure 10.6: The Wall Street Journal – A Daily Newspaper

Source: http://s3.amazonaws.com/stitcher.assets/customfeedimages/480x270_5447.jpg

Given below is a table summarizing the main features of the five types of periodicals:

Table 10.2: Types of Periodicals

Types of Periodicals	Scholarly & Research Journals	Professional, Trade & Industry Journals	Journals of Commentary & Opinion	Newspapers	Popular Magazines
Examples	American Historical Review	RN Library Journal Science Teacher	Mother Jones National Review Atlantic	New York Times Washington	Time Newsweek Sports

Contd...

	Bioscience New England Journal of Medicine Social Psychology Quarterly	Restaurants and Institutions	New Republic	Post Christian Science Monitor Wall Street Journal	Illustrated Reader's Digest
Values & Uses	Reports of original research; In depth analysis of issues related to the discipline; Lengthy articles. Academic level book reviews; Refereed or peer-reviewed	Current trends, news & products in a field; Company, organization, & biographical information; Statistics, forecasts; Employment & career information; Book and product reviews	Commentaries on social & political issues; Some in-depth analysis; Political viewpoints, liberal, conservative & other; Sometimes acts as voice of activist organization; Speeches & interviews; Book reviews	Current information; News stories; Local and regional focus; Classified ads; Editorials; Speeches; some book reviews; Primary source for information on events	Current events; Hot topics; Primary source for analysis of popular culture; Short articles; Generally not much depth; Interviews; some book reviews
Language	Academic; Can be very technical; Uses the language of the discipline	Written for practitioners; Can use jargon extensively	Written for a general educated audience	Written for a general educated audience	Non-technical, often simple language
Authors	Researchers, academics, scholars, etc.	Practitioners in the field or journalists with subject expertise	Extremely variable; Can be academics, journalists, representatives of various "groups"	Journalists	Generally, journalists and freelance writers
Sources	Footnotes and bibliographies, Often very extensive documentation	Occasional brief bibliographies; Sources sometimes cited in text	Occasionally cite sources in text or provide short bibliographies	Rarely cite any sources in full	Rarely cite any sources
Publisher	Universities, scholarly presses or academic and research or professional organizations	Commercial publishers or professional and trade associations	Commercial publishers or non-profit organizations	Commercial publishers	Commercial publishers
Graphics	Graphs, charts, formulas, depending on the discipline; Do not contain glossy ads	Photographs, charts, tables, illustrations of all sorts; ads related to the profession	Varies a lot; Some very plain, some have graphics, colours and ads	Pictures, charts, ads of all sorts	Glitzy, many graphics and pictures; full of colour ads

Source: http://libguides.southernct.edu/librarytutorial

Self Assessment

Fill in the blanks:

5. .... in scholarly journals are written by highly educated people who are often experts, practitioners and teachers in specialized academic fields.

6. .... implies that one's scholarly peers review your work.

7. .... focus on popular culture, i.e. entertainment, cultural trends, sports, hobbies, etc.

8. .... report on national and international current events, social and political trends, public opinion, and popular culture.

10.3 Periodical Index

A periodical index is a type of reference source that lists periodical articles by subject or author. If you have a topic in mind, a periodical index can help you find articles about that topic. Other listings of the contents of magazines and journals, especially for older materials, are called periodical indexes. An index is a topical listing of the contents of an identified body of information. For example, the index to a book identifies page(s) on which a particular name or subject appears in the book. A periodical index is a subject listing (often including lists for authors and titles as well as subject words) of the articles from a selected group of *periodicals*.

An index will point you to the right periodical, the specific date or issue copy, and even the pages for a specific article. A periodical index works like a subject catalogue for the articles within a group of magazines and journals. The process of using an index is similar to the process of doing subject or keyword searches for items in a library catalogue.

Example: Rasmuson Library has both print indexes in book form and computer-based indexes available on CD-ROM or through the Internet.

Use a Periodical Index

● when looking for articles on a topic in journals, magazines or newspapers

● when you know of an article but don't have all of the information in the citation

● when you want to know what has been written about a topic during a specific set of years

Examples

● Historical Abstracts; America: History & Life (for world history; for history of U.S. & Canada)

● Medline (for medical or health issues)

● Sociological Abstracts (for sociology and popular culture)

10.3.1 Parts of an Index

Following are the parts of index:

1. *Searching Mechanism:* In a print index, the searching mechanism is simply an alphabetical list of authors, titles, or subjects that refer to a master list of citations. On-line or CD-ROM indexes use software that search a database by author, title, subject, or keyword.

2.   *Citations:* Brief descriptions of an item that identify specific articles. No matter what kind of index you use, citations follow a similar format and contain the same basic parts.

10.3.2 Parts of a Citation

The information appearing in an index about an article is called a citation. The citation usually includes:

1.   Title of the article

2.   **Author's name or names** if there is more than one author (sometimes a shorter article or news item has no named author)

3.   **Title of the periodical**. Some indexes label the periodical title as the "source" (abbreviated as "so") because the periodical is the source for the article.

4.   **Volume and issue number** of the periodical in which the article appears. A volume often covers one year of publication and an issue is an individual copy within a volume. A volume and/or issue may not be included.

5.   **Date of the periodical issue** in which the article appears.

6.   **Pages** on which the article appears.

7.   **Additional information** about the article such as illustrations, maps, charts that appear in the article.

10.3.3 Sample Citations

Here's an example of a citation from ArticleFirst, an online index that includes periodicals covering a wide range of subjects. (ArticleFirst can be accessed through OCLC FirstSearch.)

Author(s): Keenan, Jeremy

Title: The theft of Saharan rock-art

Source: Antiquity. 74, no. 284, (2000): 287 (2 pages)

Additional Info: Antiquity Publications [etc.]

Alt Journal: Key Title: Antiquity

Standard No: ISSN: 0003-598X CODEN: ATQYAF

OCLC No: 1481624

The following citation labels the periodical as "SOURCE." TITLE refers to the actual article.

Author: Pennisi, E.

Title: Grasshoppers change coats to beat the heat.

Source: Science, v. 140, n. 8, p. 119–120

The "source" of the article "Grasshoppers change coats to beat the heat" is the periodical Science. The article appears in volume 140, issue number 8 of Science and is on pages 119 through 120 of that issue.

This citation uses abbreviations for title (TI), author (AU) and source (SO):

TI: **School literacy: the real ABC's. AU: Greenspan, A.C. SO: Phi Delta Kappan, vol. 72, no. 4, pp. 300–304, Dec. 1991.**

The "source" of the article "School literacy: the real ABC's" is the periodical Phi Delta Kappan. The article appears in volume 72, issue number 4 which had the date December 1991. The article appears on pages 300 through 304 of Phi Delta Kappan.

Finally, here is an example of a typical citation from a printed index:

The sound and sense of poetry. M. Sagan. il. The Writer. 104 (9):23–26. Oct. 1991.

The title of the article is "The sound and sense of poetry", the author is M. Sagan, and the article is illustrated (IL.). The title of the periodical in which this article appears is The Writer, in volume 104, number 9, on pages 23 through 26, with the date of October, 1991.

Indexes will provide explanations of their formats and any abbreviations used. Check HELP screens in a computer-based index or in a printed index; look for help in the introduction, usually at the beginning of each volume.

10.3.4 Special Features of Some Online Indexes

Following are the special features of some online indexes:

- *Abstracts:* An abstract is simply a summary of the key points of an article. Skimming abstracts can save time in the search process and help you hone in on the most relevant articles.

- *Full-text:* Many online indexes now provide the full-text of the article along with the citation. This feature can save hours of time searching the library for the article in the print copy of the periodical, or trying to obtain the periodical through interlibrary loan.

- *Hyperlinks:* Some online citations include hyperlinks. If the author's name is hyperlinked, clicking the link will bring up citations to other articles by the same author. Hyperlinked subject headings can be especially helpful in finding similar articles on your topic.

10.3.5 Special Tip for Using Print Indexes

Most print indexes use many abbreviations, especially of periodical titles. Fortunately, most indexes explain their abbreviations in the introductory pages. Many periodicals have similar titles which are easily confused. For example, does the abbreviation "Chem Ind" refer to the title Chemical Industries or to Chemical and Industry? If you don't look up the abbreviation, you will have difficulty searching for the periodical in the library catalogue.

If you can't find a list of abbreviations in the index you are using, publications such as, Periodical Title Abbreviations: By Abbreviation (call number PN4832 P47 READY REF) can help.

Notes READY REF (the location code) indicates that this book is located in the Ready Reference collection.

10.3.6 Steps in Finding a Periodical Article

Following are the steps of finding a periodical article:

- *Choose and Define a Topic.* Make a list of subjects or keywords that describe your topic.

- *Choose an Appropriate Index* (ask a reference librarian, get recommendations from professors or for more recent articles use online indexes listed on the library's Resources by Subject page.)

Notes

- *Find Instructions for using the Index*. For online indexes, use HELP screens; for printed indexes, check the introduction.

- *Search the Index.* Look up key words or subjects in the index. Make printouts of citations for the articles you like.

- *Does the Index Contain Full-text of the Articles Themselves?*

  If yes, then select and read those most helpful for your topic.

  If no, then go to the Library home page and click on the link to the Journals List.

  Search for the title of the periodical you need in this list. If it is there, follow the links.

- *If the Periodical is not in the Journals List, go to Goldmine and Search for the Title of the Periodical.* Make a printout of the holdings screen (volume and years owned) at the bottom of the Goldmine screen.

- *Find the Right Issue of the Periodical* which contains your article and note the *call number* and *location code* to locate the periodical on the shelf.

Self Assessment

Fill in the blanks:

9. A …………………… is a type of reference source that lists periodical articles by subject or author.

10. A periodical index is a subject listing of the articles from a selected group of …………………….

11. If the author's name is …………………… clicking the link will bring up citations to other articles by the same author.

10.4 Periodical Literature

More current than books, periodicals play a different role in the research process. The variety to viewpoints available through periodicals makes them a valuable source of information. By nature they tend to focus on a narrower topic. A scholarly article contributes to the body of knowledge on that topic.

The author of a book spends a good deal of time gathering and analysing information, testing theories, and drawing conclusions. An editor then reviews the manuscript at least once and sometimes suggests major revisions. The process of physically producing a book might take a year or more. By the time a book is prepared, printed, purchased by a library and put on the shelf for circulation, the information might be two or more years old.

On the other hand, the information in a newspaper might be only a few hours old, and magazines often report on news only several days old. Many journal articles are not published until months after being written, yet the information still tends to be more current than that in books.

Researchers should not assume that periodicals are more valuable than books because of their currency, however. Many articles that report on timely issues and recent events lack the analysis, the background information and the broad perspective offered in books. The need for up-to-date information depends on the topic and on your approach to it.

Another advantage to periodicals is the variety of opinions and viewpoints readily available. The work of writers with different backgrounds, different qualifications and different beliefs can be found easily.

10.4.1 Definitions

Serials

Any publication issued in successive parts that appear at intervals of time but not necessarily regularly. Conference proceedings and periodicals are examples.

Periodicals

Materials published at a regular period of time – magazines, journals and newspapers. Periodicals are one type of serials.

Periodical Holdings List or Serials List

A list of publications owned by a library, arranged alphabetically by title. The years held by the library and the location is also shown.

Microform

Printed material that has been photographically reduced onto film. They must be read on special machines. Microfilm comes in rolls.

Microfiche is produced on flat four by six inch film. Microform is used to preserve information from decay and to save storage space.

10.4.2 Finding Journals, Magazines & Newspapers

At North Seattle Community College Library, the *Periodicals Holdings List* shows all periodical titles we own, their locations, and the dates we have. This list is arranged alphabetically, and a separate subject guide helps identify periodicals by broad subject focus. Separate lists for the holdings of Central and South campuses are included in the same binder. It is also possible to search the Voyager Library Catalogue for periodical titles.

Periodical directories such as *Ulrichs International Periodical Directory* make it possible to find the names of periodicals dealing with a field or with a geographical area. Ask for help at the reference desk. Once a title is identified, use the holdings list or the library catalogue to determine whether it is available. Choose author/title/subject search, and select "periodical title" before searching. Other libraries' catalogues, such as University of Washington and local public libraries are also options.

Most researchers, however, need a list of articles about their subject. Library catalogues and directories such as *Ulrichs* are helpful in identifying specific periodical titles, but they do not help identify individual articles.

10.4.3 Finding Articles with Periodical Indexes

To find information inside a book, you would look at the book's index. Searching individual periodicals for the information you need would be impractical, and most periodicals don't have a single index to help you find information. To help researchers find periodical information, there are companies that produce indexes to periodical literature. These indexes typically cover many different periodical publications. Some indexes are general in nature, while others focus on a particular discipline or area of study.

The content of periodical indexes also varies. Some are intended to cover general subjects whereas others specialize in one field such as science or education. Some indexes include only newspapers, some cover popular magazines, some cover journals and some represent a combination.

Did u know? Certain indexes provide an abstract, which is a summary of the article.

Some periodical indexes are published as books, while others are available online. In either case, these indexes are subscriptions the library maintains for its users.

Many libraries offer the printed version of the popular and well-known *Reader's Guide to Periodical Literature,* and most libraries have at least one online periodical index. Much of the information you will need can be found in online indexes, such as *ProQuest* Direct, but occasionally you may need to consult printed indexes. You might need a printed index because you are looking for older information that isn't available online, or you may need to use a specialized index that is only available in print, such as the *Business Periodicals Index*. Increasingly, libraries are depending on online indexes that offer full text articles.

10.4.4 Step by Step: Researching with Periodicals

Use the following steps as a guide as you begin your periodical research.

(a) Describe in writing the information you need. Clarify the time-frame of your topic. The more you understand what you need, the easier it will be to identify relevant articles.

(b) Make a list of words and phrases which describe all aspects of the topic. Include all associated organizations, personal names, events, laws and objects. Add to this list as your research progresses. The list will help you approach your research from all angles.

(c) Decide which periodical index is appropriate, considering subjects and dates covered as well as the type of material indexed.

(d) Do not always expect to find one periodical index that's perfect for your needs. If one does not seem adequate, try another. Researchers commonly use several.

(e) Once you have identified an article you might want to use, record the information you will need to find the article, including the title and date or issue of the periodical, and the title and author of the article.

(f) Libraries do not necessarily subscribe to all the periodicals included in their periodical indexes. Use the library's list of periodical holdings or the online catalogue to find out if the library carries the publication and has the date you need.

(g) Articles may be requested from another campus in the Seattle Community College District. If you need an article that is not available from any of the three campuses, talk to a librarian at the reference desk.

(h) As you retrieve articles, look to see how helpful they are. It might be necessary to revise your search strategy.

(i) Be sure to record bibliographic information for the articles you think you may use. This will save time and frustration when you assemble your list of works cited.

10.4.5 Evaluating Articles

Once you have identified an article that you can use:

(a)   Skim the article and make note of references to other information sources.

(b)   Determine the author's purpose and the intended audience.

(c)   Determine whether the discussion includes documented fact, or persuasive argument and opinion.

(d)   Determine the author's main point.

(e)   Consider how the article relates to your information need. Does it answer all or part of your question?

(f)   If you are convinced that the article will be useful, read it carefully.

(g)   Determine how the author supports the main point.

(h)   Look for any indications of bias or faulty reasoning.

(i)   In your own words, summarize the information that this author has provided to answer your information need.

(j)   Carefully note any other information sources that may help you.

(k)   List names of people, events, places, or ideas which are associated with your topic. These may help you find other important sources.

Task   Collect as a sample of different periodical section.

Self Assessment

State whether the following statements are true or false:

12.   The information in a newspaper might be only a few hours old, and magazines often report on news only several days old.

13.   Once a title is identified, use the holdings list or the library catalogue to determine whether it is available.

14.   Some indexes are general in nature, while others focus on a particular discipline or area of study.

15.   Some periodical indexes are published as books, while others are available online.

Case Study   **Impact of Library Automation in the Development Era**

India has made great strides in computer and telecommunication technologies. It was one of the first few nations, which realized the potentialities of computer for bibliographical information work and routine library housekeeping operations. Computer has gained its importance in every field of human activity because of its speed, Accuracy and capability of large scale processing. It is space saving device as well because information stored on computer readable devices takes much less space than the

Contd...

Notes

conventionally stored systems. The main aim of any library is to provide access to proper information explosion, due to growing demands of the user and shrinking of financial resources, library is not able to obtain all the reading materials on demand. The only way to overcome these problems is resources sharing through networking. New technologies library provides several new materials, media and mode of storing and communicating the information. Library automation reduces the drudgery of repeated manual efforts in library routine by use of library automation collection, Storage, administration, processing, preservation and communication etc.

Steps in Library Automation

Automation requires planning, designing, and implementation. Planning involves identification of the activities to be automated, assessment of the volumes of information to be handled, selection of software, selection of compatible hardware systems, training and retraining of the library staff and educating users.

Planning for Library Automation

- Needs mapping
- Best possible package
- Staff involvement
- Budget (Purchase, Operation, Maintenance etc.)
- Hardware requirement (Client/Server, Printer etc.)
- Platform (Operating system)
- User awareness
- Maintenance

Selecting Automation Packages

- User friendly
- Popularity of package
- Well-designed screens logically arranged functions with extensive help messages
- Minimum Training
- Multi-user and unlimited user access
- Support internationally known standards (MARC, AACR2)
- Training and support (Email, Discussion Forum)

Basic requirements for the automation of libraries are:

1. Adequate selection.
2. Financial assistance.
3. Computer hardware.
4. Library software.
5. Training of the staff.
6. Maintenance of development.

Library Housekeeping Operations

A library will have to perform minimum number of basic operations. There operations are conventionally referred to as "Housekeeping operations".

The basic modules of automated system are:

1. Acquisition

2. Circulation

3. Cataloguing

4. Serial control

5. OPAC

Acquisition

The purpose of acquisition is to manage and control the expenditure of funds for materials that meet the collection development criteria of the library and the needs of its clientele. This means that acquisition process must be accurate, efficient and responsive to the demands of library users.

Circulation Module

In libraries the circulation system conventionally managed consists of charges, discharges, overdue control, reservation, renewal and appropriate records maintenance. These operations are quite amenable to automation. An automated circulation system acts as in interface between the user and the information system with other backup services like acquisition, cataloguing serial control and housekeeping chores. The circulation module performs the task, involved in the circulation function, such as material check-in, check-out, inventory, overdue notices, holds, and reserves, fines, and statistical reports. The use of technological devices such as computers, barcode, scanners and its software in circulation helps in performing these routine operators easily and quickly.

Cataloguing Module

One of the major tasks in libraries is cataloguing In manual cataloguing say card catalogue requires multiple entries author, title,subject series, etc. This means repetitive work. The module performs various cataloguing tasks such as original cataloguing using the Machine Readable Catalogue (MARC) protocol, editing, copying, saving and retrieving catalogues records. When a record is saved in the cataloguing database, the record automatically appears in the OPAC, and a brief copy of the record is also generated automatically for the circulation module.

Online Public Access Catalogue (OPAC)

Module because cataloguing module is the OPAC is what users consult to find and retrieve information of interest. Generally, the OPAC is equivalent to the card catalogue, but it provides advanced search features. The OPAC function allows searching by author, title, subject or keyword; search using Boolean operators [AND, RO, NOT] hyperlink searching, wild character searching and combined search strategy options. The OPAC module is the only one that is inseparable from cataloguing. A library cannot have the OPAC without the cataloguing heart of the automated systems.

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│        │      Integrated Library Information System      │       │
│        └─────────────────────────────────────────────────┘       │
│           ↕              ↕           ↓              ↓             │
│    ┌──────────────┐   ┌────────┐  ┌────────────────┐             │
│    │ Acquisition  │   │  OPAC  │  │  Circulation   │             │
│    │   System     │   │        │  │    System      │             │
│    └──────────────┘   └────────┘  └────────────────┘             │
│                  ┌─────────────┐  ┌─────────────┐                │
│                  │  Technical  │  │   Serial    │                │
│                  │   System    │  │   System    │                │
│                  └─────────────┘  └─────────────┘                │
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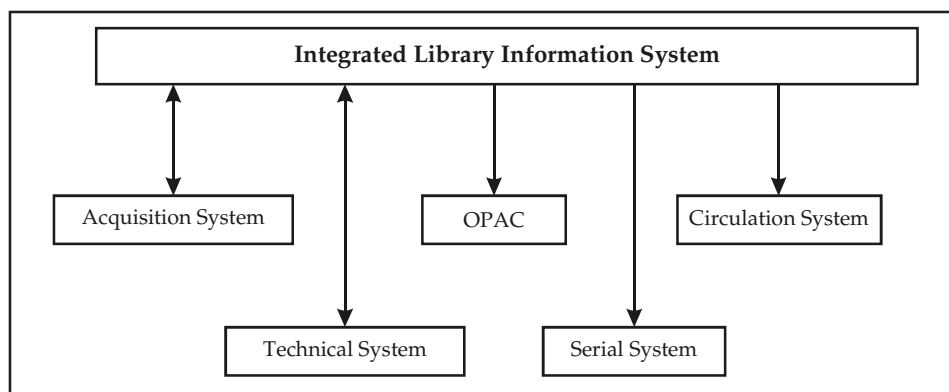
Serial Control

The complex job of keeping track of serials can easily and effectively be handled using SOUL through its Serial Control module. This module broadly handles following functions.

- Suggestions.

- Subscription (renewal and new subscription)

- Payment including fund control etc.

- Check in of issues including reduction of issues arrival.

- Reminder generations.

- Binding management.

- Search status of every item.

- Master databases management.

For the successful implementation of an integrated library system all key factors must be in place support from administration, staff, competence, consideration of user requirements, presence of infrastructure, (hardware, software, networks) available data, excellent managerial skill from the coordinator of the project.

Question

Analyse the case and write down the case facts.

Source: http://www.isrj.net/UploadedData/283.pdf

10.5 Summary

- A periodical is an on-going publication with a distinctive title, which comes out in issues at regular intervals e.g. daily, weekly, fortnightly, monthly etc.

- Periodicals (Librarians call them "serials") come in a variety of styles and are published for a variety of audiences. They offer news, opinion, commentary, scholarly analysis, literary criticism, and reports of research.

- The Library subscribes to a comprehensive range of periodicals. Some of these are in print format, while an increasing number of periodicals are available electronically and are known as electronic journals.

- While a number of electronic journals are not listed on the library catalogue they are accessible from the Electronic Journals page.

- If the library does not subscribe to the periodical you need, you may request a copy of the article that you need through Document Delivery Services.

- Many scholarly journals will not publish an article until it has been reviewed by an editorial board to insure that it meets certain standards of scholarly quality.

- A periodical index is a type of reference source that lists periodical articles by subject or author. If you have a topic in mind, a periodical index can help you find articles about that topic. Other listings of the contents of magazines and journals, especially for older materials, are called periodical indexes.

- An index will point you to the right periodical, the specific date or issue copy, and even the pages for a specific article.

- Most print indexes use many abbreviations, especially of periodical titles. Fortunately, most indexes explain their abbreviations in the introductory pages. Many periodicals have similar titles which are easily confused.

- The author of a book spends a good deal of time gathering and analysing information, testing theories, and drawing conclusions. An editor then reviews the manuscript at least once and sometimes suggests major revisions.

- Periodical Indexes are tools that provide a list of articles about a certain topic along with the information needed to locate the actual article: title and author of article, name and date of the periodical, and page numbers. This unit of information that identifies the article is called a citation.

10.6 Keywords

Abstracts: An abstract is simply a summary of the key points of an article.

Citations: Brief descriptions of an item that identify specific articles.

Journals: Journals are refereed, which means that articles submitted for publication go before a panel of experts i.e. peer-reviewed, before being accepted for publication.

Magazines: Magazines are written for general readers.

News Magazines: News magazines report on national and international current events, social and political trends, public opinion, and popular culture.

Newspapers: A newspaper is a periodical publication containing news regarding current events, informative articles, diverse features, editorials, and advertising.

Periodical: Periodical is a term used for publications which come out "periodically," on a predictable basis.

Periodical Index: A periodical index is a type of reference source that lists periodical articles by subject or author. If you have a topic in mind, a periodical index can help you find articles about that topic.

Searching Mechanism: In a print index, the searching mechanism is simply an alphabetical list of authors, titles, or subjects that refer to a master list of citations.

10.7 Review Questions

1. What is periodical?

2. Distinguish between periodical, journal, magazine, and newspapers.

3. Briefly explain the locating and borrowing periodicals.

4. What are the various types of periodicals?

5. Explain the meaning of periodical index.

6. What are the parts of an index and citation?

7. Write down the steps in finding a periodical article.

8. Write short note on periodical literature.

Answers: Self Assessment

1.	Periodical	2.	Semi-annual
3.	Electronic journals	4.	Electronic Journals page
5.	Articles	6.	"Peer-reviewed"
7.	Popular magazines	8.	News magazines
9.	Periodical index	10.	periodicals
11.	Hyperlinked	12.	True
13.	True	14.	True
15.	True		

10.8 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Online links

www.bethlehem.edu/library/services/serials

www.ddugu.edu.in/department.php?tag=Library-Information-Science

www.goalexandria.com/support/training/bp/periodicals.html

Unit 11: Library Reports

Objectives

After studying this unit, you will be able to:

- Recall the meaning of report

- Recognize the features or characteristics of report

- Generalize the structure of a report

- Discuss the writing of the report

Introduction

A report is a presentation of facts and findings, usually as a basis for recommendations; written for a specific readership, and probably intended to be kept as a record. When some people write a report, that's all they do: write. But the really successful writers only spend part of their time doing this, and then only towards the end. Before that, they are planning their report – thinking about its purpose, and who is going to read it; deciding what to put in it, and fitting it into shape. And even when they're finally writing it, they'll probably spend just as much time thinking about how best to present their ideas, as actually putting them onto paper. Experienced writers always allow plenty of time for these – the first two stages in report writing, even when they are working against the clock. They know that once these are clear in their minds, they'll save themselves hours of work and worry later on.

Report writing is useful in both the academic and the business world, so whether you are planning to continue your education or get a job after you complete your upgrading, this is a skill you will definitely need.

11.1 Meaning of Report

Report is a self-explanatory statement of facts relating to a specific subject and serves the purpose of providing information for decision making and follow up actions. It is a systematic presentation of ascertained facts about a specific event/subject. Report is a summary of findings and recommendations about a particular matter/problem. Report is for the guidance of higher authorities including company executives and directors. Report facilitates timely decisions and follows up measures.

According to Oxford Dictionary, report means "a record of ascertained facts."

A report is always expository writing; that is, it can be either informative or persuasive. Many students think of report writing as a long, dreary process with few uses in the "real world". Reports are probably the most common form of work related writing. Reports can be any length, from a single paragraph to many pages, and they can be either formal or informal in tone. Reports can be written or spoken. Depending on the circumstances, a report may be based on your own personal knowledge of a subject or on information you have gathered through reading, listening, and interviewing specifically for the project.

Any time you gather information, organize it, and pass it along, you have created a report. For example, when you comment to a co-worker that "It sure is a cold, grey day with lots of blowing snow" you have, in fact, gathered information from your own experience about the temperature, the precipitation, the wind, etc. and passed it along in the form of a short oral report. If, on the other hand, you had written this same information in a letter to your best friend, – even if it was only one sentence long – you would have created a written report.

Did u know? The term report is difficult to define because it refers to such a wide variety of documents. Reports can be as simple as filling in the blanks or answering a few questions about an accident, or they can be long and involved requiring years of study, hundreds of contributors, and several thick volumes to record the results.

11.1.1 Good Report

Two of the reasons why reports are used as forms of written assessment are:

- to find out what you have learned from your reading, research or experience;

● to give you experience of an important skill that is widely used in the work place.

An effective report presents and analyses facts and evidence that are relevant to the specific problem or issue of the report brief.

⚠

Caution All sources used should be acknowledged and referenced throughout, in accordance with the preferred method of your department/university.

The style of writing in a report is usually less discursive than in an essay, with a more direct and economic use of language. A well written report will demonstrate your ability to:

● understand the purpose of the report brief and adhere to its specifications;

● gather, evaluate and analyse relevant information;

● structure material in a logical and coherent order;

● present your report in a consistent manner according to the instructions of the report brief;

● make appropriate conclusions that are supported by the evidence and analysis of the report;

● make thoughtful and practical recommendations where required.

11.1.2 Materials

Most writers imagine that their report will be the major event in the reader's day, when, in reality, the poor fellow is awash with reading matter, drowning in facts, figures, and opinions. What he wants is easily-digested information, and then only enough to help him reach a decision. So the content of report, and its structure, must be very carefully planned.

The two golden rules to follow when deciding what to put into a report are:

(a) Simplify, and be ruthless about it. Reject the irrelevant, agonize over the doubtful, and make sure you've got the essential.

(b) Justify your conclusions with facts, and state their sources. Build the facts into a logical and consistent case, so as to lead the reader to the same conclusions as your own.

Self Assessment

Fill in the blanks:

1. ………………… is a self-explanatory statement of facts relating to a specific subject and serves the purpose of providing information for decision making and follow up actions.

2. An effective report presents and analyses facts and evidence that are relevant to the specific ………………… of the report brief.

3. The style of writing in a report is usually less discursive than in an ………………….

4. A well written report will demonstrate your ability to understand the purpose of the report brief and adhere to its ………………….

11.2 Features or Characteristics of Report

All reports are factual. You must be able to back up any facts you include. All reports organize facts into a meaningful presentation. Most reports interpret the information gathered.

Notes

Many reports make recommendations. Almost all reports are assigned or requested. This means that your purpose and audience are determined before you start to work. Following are the characteristics of Report:

1. *Complete and Compact Document:* Report is a complete and compact written document giving updated information about a specific problem.

2. *Systematic Presentation of Facts:* Report is a systematic presentation of facts, figures, conclusions and recommendations. Report writers closely study the problem under investigation and prepare a report after analysing all relevant information regarding the problem. Report is supported by facts and evidence. There is no scope for imagination in a report which is basically a factual document.

3. *Prepared in Writing:* Reports are usually in writing. Writing reports are useful for reference purpose. It serves as complete, compact and self-explanatory document over a long period. Oral reporting is possible in the case of secret and confidential matters.

4. *Provides Information and Guidance:* Report is a valuable document which gives information and guidance to the management while framing future policies. It facilitates planning and decision making. Reports are also useful for solving problems faced by a business enterprise.

5. *Self-explanatory Document:* Report is a comprehensive document and covers all aspects of the subject matter of study. It is a self-explanatory and complete document by itself.

6. *Acts as a Tool of Internal Communication:* Report is an effective tool of communication between top executives and subordinate staff working in an organization. It provides feedback to employees and to executives for decision making. Reports are generally submitted to higher authorities. It is an example of upward communication. Similarly, reports are also sent by company executives to the lower levels of management. This is treated as downward communication. In addition, reports are also sent to shareholders and others connected with the company. It may be pointed out that report writing/ preparation acts as a backbone of any system of communication.

7. *Acts as Permanent Record:* A report serves as a permanent record relating to certain business matter. It is useful for future reference and guidance.

8. *Time Consuming and Costly Activity:* Report writing is a time consuming, lengthy and costly activity as it involves collection of facts, drawing conclusion and making recommendations.

Self Assessment

State whether the following statements are true or false:

5. All reports are factual.

6. There is a scope for imagination in a report.

7. Report writing is a time consuming.

8. Report is a comprehensive document and covers all aspects of the subject matter of study.

11.3 Structure of a Report

The main features of a report are described below to provide a general guide. These should be used in conjunction with the instructions or guidelines provided by your department.

11.3.1 Title Page

This should briefly but explicitly describe the purpose of the report (if this is not obvious from the title of the work). Other details you may include could be your name, the date and for whom the report is written.

Example: Geology of the country around Beacon Hill, Leicestershire Angus Taylor

2 November 2004

11.3.2 Terms of Reference

Under this heading you could include a brief explanation of who will read the report (audience) why it was written (purpose) and how it was written (methods). It may be in the form of a subtitle or a single paragraph.

Example: A report submitted in fulfilment of the requirements for Course GL456, Department of Geology, University of Leicester.

11.3.3 Summary (Abstract)

The summary should briefly describe the content of the report. It should cover the aims of the report, what was found and what, if any, action is called for. Aim for about 1/2 a page in length and avoid detail or discussion; just outline the main points. Remember that the summary is the first thing that is read. It should provide the reader with a clear, helpful overview of the content of the report.

Example: Exposure of rocks belonging to the Charnian Supergroup (late Precambrian) were examined in the area around Beacon Hill, north Leicestershire. This report aims to provide details of the stratigraphy at three sites – Copt Oak, Mount St. Bernard Abbey and Oaks in Charnwood. It was observed that at each of these sites, the Charnian Supergroup consists mainly of volcaniclastic sediments (air-fall and ash-flow tuffs) interbedded with mudstones and siltstones. These rocks show features that are characteristic of deposition in shallow water on the flanks of a volcano (e.g. welding and alteration of ignimbrites). Further studies are required to understand depositional mechanisms and to evaluate the present-day thickness of individual rock units.

11.3.4 Contents (Table of Contents)

The contents page should list the different chapters and/or headings together with the page numbers. Your contents page should be presented in such a way that the reader can quickly scan the list of headings and locate a particular part of the report. You may want to number chapter headings and subheadings in addition to providing page references. Whatever numbering system you use, be sure that it is clear and consistent throughout.

11.3.5 Introduction

The introduction sets the scene for the main body of the report. The aims and objectives of the report should be explained in detail.

> *Notes* Any problems or limitations in the scope of the report should be identified, and a description of research methods, the parameters of the research and any necessary background history should be included.

In some reports, particularly in science subjects, separate headings for Methods and Results are used prior to the main body (Discussion) of the report as described below.

11.3.6 Methods

Information under this heading may include: a list of equipment used; explanations of procedures followed; relevant information on materials used, including sources of materials and details of any necessary preparation; reference to any problems encountered and subsequent changes in procedure.

11.3.7 Results

This section should include a summary of the results of the investigation or experiment together with any necessary diagrams, graphs or tables of gathered data that support your results. Present your results in a logical order without comment. Discussion of your results should take place in the main body (Discussion) of the report.

11.3.8 Discussion

The main body of the report is where you discuss your material. The facts and evidence you have gathered should be analysed and discussed with specific reference to the problem or issue. If your discussion section is lengthy you might divide it into section headings. Your points should be grouped and arranged in an order that is logical and easy to follow. Use headings and subheadings to create a clear structure for your material. Use bullet points to present a series of points in an easy-to-follow list. As with the whole report, all sources used should be acknowledged and correctly referenced.

11.3.9 Conclusion

In the conclusion you should show the overall significance of what has been covered. You may want to remind the reader of the most important points that have been made in the report or highlight what you consider to be the most central issues or findings. However, no new material should be introduced in the conclusion.

11.3.10 Appendices

Under this heading you should include all the supporting information you have used that is not published. This might include tables, graphs, questionnaires, surveys or transcripts. Refer to the appendices in the body of your report.

11.3.11 Bibliography

Your bibliography should list, in alphabetical order by author, all published sources referred to in your report. There are different styles of using references and bibliographies. Texts which you consulted but did not refer to directly could be grouped under a separate heading such as

'Background Reading' and listed in alphabetical order using the same format as in your bibliography.

11.3.12 Acknowledgements

Where appropriate you may wish to acknowledge the assistance of particular organisations or individuals who provided information, advice or help.

11.3.13 Glossary of Technical Terms

It is useful to provide an alphabetical list of technical terms with a brief, clear description of each term. You can also include in this section explanations of the acronyms, abbreviations or standard units used in your report.

Notes You will not necessarily be required to use all of the headings described above, nor will they necessarily be in the order given here. Check your departmental guidelines or instructions.

Self Assessment

Fill in the blanks:

9.   The …………………… should briefly describe the content of the report.

10. The …………………… page should list the different chapters and/or headings together with the page numbers.

11. The …………………… sets the scene for the main body of the report.

12. In the …………………… you should show the overall significance of what has been covered.

11.4 Writing the Report

All reports need to be clear, concise and well structured. The key to writing an effective report is to allocate time for planning and preparation. With careful planning, the writing of a report will be made much easier. The essential stages of successful report writing are described below. Consider how long each stage is likely to take and divide the time before the deadline between the different stages. Be sure to leave time for final proof reading and checking.

Stage One: Understanding the Report Brief

This first stage is the most important. You need to be confident that you understand the purpose of your report as described in your report brief or instructions. Consider who the report is for and why it is being written. Check that you understand all the instructions or requirements, and ask your tutor if anything is unclear.

Stage Two: Gathering and Selecting Information

Once you are clear about the purpose of your report, you need to begin to gather relevant information. Your information may come from a variety of sources, but how much information you will need; will depend on how much detail is required in the report. You may want to begin

by reading relevant literature to widen your understanding of the topic or issue before you go on to look at other forms of information such as questionnaires, surveys etc. As you read and gather information you need to assess its relevance to your report and select accordingly. Keep referring to your report brief to help you decide what relevant information is.

Stage Three: Organising Your Material

Once you have gathered information you need to decide what will be included and in what sequence it should be presented. Begin by grouping together points that are related. These may form sections or chapters. Remember to keep referring to the report brief and be prepared to cut any information that is not directly relevant to the report. Choose an order for your material that is logical and easy to follow.

Stage Four: Analysing Your Material

Before you begin to write your first draft of the report, take time to consider and make notes on the points you will make using the facts and evidence you have gathered. What conclusions can be drawn from the material? What are the limitations or flaws in the evidence? Do certain pieces of evidence conflict with one another? It is not enough to simply present the information you have gathered; you must relate it to the problem or issue described in the report brief.

Stage Five: Writing the Report

Having organised your material into appropriate sections and headings you can begin to write the first draft of your report. You may find it easier to write the summary and contents page at the end when you know exactly what will be included. Aim for a writing style that is direct and precise. Avoid waffle and make your points clearly and concisely. Chapters, sections and even individual paragraphs should be written with a clear structure. The structure described below can be adapted and applied to chapters, sections and even paragraphs.

- Introduce the main idea of the chapter/section/paragraph

- Explain and expand the idea, defining any key terms.

- Present relevant evidence to support your point(s).

- Comment on each piece of evidence showing how it relates to your point(s).

- Conclude your chapter/section/paragraph by either showing its significance to the report as a whole or making a link to the next chapter/section/paragraph.

Stage Six: Reviewing and Redrafting

Ideally, you should leave time to take a break before you review your first draft. Be prepared to rearrange or rewrite sections in the light of your review. Try to read the draft from the perspective of the reader. Is it easy to follow with a clear structure that makes sense? Are the points concisely but clearly explained and supported by relevant evidence? Writing on a word processor makes it easier to rewrite and rearrange sections or paragraphs in your first draft. If you write your first draft by hand, try writing each section on a separate piece of paper to make redrafting easier.

Stage Seven: Presentation

Once you are satisfied with the content and structure of your redrafted report, you can turn your attention to the presentation. Check that the wording of each chapter/section/subheading is clear and accurate. Check that you have adhered to the instructions in your report brief regarding

format and presentation. Check for consistency in numbering of chapters, sections and appendices. Make sure that all your sources are acknowledged and correctly referenced. You will need to proof read your report for errors of spelling or grammar. If time allows, proof read more than once. Errors in presentation or expression create a poor impression and can make the report difficult to read.

Task   Prepare a sample report.

Self Assessment

State whether the following statements are true or false:

13.   All reports need to be clear, concise and well structured.

14.   Writing style must not be direct and precise.

15.   Chapters, sections and even individual paragraphs should be written with a clear structure.

16.   Writing on a word processor makes it easier to rewrite and rearrange sections or paragraphs in your first draft.

Case Study   **Information Technology in Nigerian Academic Libraries**

The demand for distant education in Nigeria is increasing, although this is still based on the traditional technology of print media. Thus, there is the need to integrate IT into the distant education programme. Majority of higher institutions in Nigeria, even those with good Internet connectivity, are still at a low level of integration of ICT in teaching, learning, research, library, information and managerial services (Ogunsola, 2004). Ekong (2005) pointed out however that in some of the first generation university libraries, University of Benin Library, Kashim Ibrahim Library (ABU), University of Nigeria Nsukka Library and a few others, digitalization is taking place in many of their libraries and library information networks are established with connectivity through the university campus network to the Internet. The Centre for Learning Resources (CLR) Covenant University, Ota has been placed on the platform of full application of ICT because funds are made available for such innovations. Ogunsola (2004) explained that some Nigerian University campuses are now jam-packed with IT facilities. It is no longer strange to see lecturers and students doing their research and other academic works using various IT devices like e-mail and the Internet. Students can absorb more information and take less time to do so with the use of IT. Ogunsola (2004) declared that librarians or any member of the academic community at Obafemi Awolowo University Library can now easily find information concerning any book in the Library of Congress in the US.

University libraries can be transformed into a new information services unit, proving electronic cataloguing, OPAC, electronics acquisition/serials control, electronic inter-library loan and calculation functions (Ogunsola, 2004). Nigerian academic libraries should not be left out of this global educational revolution. Ekong (2005) pointed out that one is also happily to note that both the Federal Government of Nigeria and International funding

Contd...

agencies are now interested in the general development of ICT in Nigerian universities. The Federal Ministry of Education embarked on the establishment of the National Virtual (Digital) Library Project, to provide, in an equitable and cost-effective manner, enhanced access to national and international library and information resources and to share locally available resources with libraries all over the world using digital technology; among other objectives. A model Virtual (Digital) Library at the National Universities Commission (NUC) will be the laboratory of the university – based libraries.

Question

Explain the role of information technology in Nigerian academic libraries.

Source: http://www.webpages.uidaho.edu/~mbolin/issa-ayodele-abubakar-bola.htm

11.5 Summary

- Report is a summary of findings and recommendations about a particular matter/problem.

- An effective report presents and analyses facts and evidence that are relevant to the specific problem or issue of the report brief.

- Most writers imagine that their report will be the major event in the reader's day, when, in reality, the poor fellow is awash with reading matter, drowning in facts, figures, and opinions.

- Most reports interpret the information gathered.

- The summary should briefly describe the content of the report. It should cover the aims of the report, what was found and what, if any, action is called for.

- The contents page should list the different chapters and/or headings together with the page numbers.

- Information under this heading may include: a list of equipment used; explanations of procedures followed; relevant information on materials used, including sources of materials and details of any necessary preparation; reference to any problems encountered and subsequent changes in procedure.

- The key to writing an effective report is to allocate time for planning and preparation.

- It is useful to provide an alphabetical list of technical terms with a brief, clear description of each term.

- The facts and evidence you have gathered should be analysed and discussed with specific reference to the problem or issue.

- It is useful to provide an alphabetical list of technical terms with a brief, clear description of each term.

11.6 Keywords

Acknowledgements: The action of expressing or displaying gratitude or appreciation for something.

Appendices: A section or table of additional matter at the end of a book or document.

Bibliography: A bibliography is a list of books, articles, and other sources you use when researching a topic and writing a paper.

Document: Something tangible that records communication or facts with the help of marks, words, or symbols.

Facts: Event, item of information, or state of affairs existing, observed, or known to have happened, and which is confirmed or validated to such an extent that it is considered 'reality.'

Guidance: Guidance refers to information given for the purpose of resolving a problem or difficulty and is mainly given by someone of authority.

Internal Communication: The sharing of information within an organization for business purposes.

Presentation: Presentation is the act of introducing via speech and various additional new information to an audience.

Record: Document that memorializes and provides objective evidence of activities performed, events occurred, results achieved, or statements made.

Report: Report is a self-explanatory statement of facts relating to a specific subject and serves the purpose of providing information for decision making and follow up actions.

Summary: An overview of content that provides a reader with the overarching theme, but does not expand on specific details.

Title Page: A page at the beginning of a book giving its title, the names of the author and publisher, and other publication information.

11.7 Review Questions

1. State two reasons why reports are used as forms of written assessment.

2. Explain two golden rules to follow when deciding what to put into a report.

3. What are the characteristics of Report?

4. Write brief note on the Summary.

5. Discuss different stages of writing a report.

6. Define Bibliography.

7. Do you think that main body of the report is where you discuss your material? If yes give reasons.

8. Write short note on the Table of Contents.

9. Why glossary of technical terms is useful?

10. Define Report.

Answers: Self Assessment

1. Report
2. Problem or Issue
3. Essay
4. Specifications
5. True
6. False
7. True
8. True
9. Summary
10. Contents
11. Introduction
12. Conclusion
13. True
14. False
15. True
16. True

11.8 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Online links

http://docommunication.weebly.com/1/post/2013/04/characteristicsfeatures-of-a-good-report.html

www.managementstudyguide.com/report-preparation.htm

www.termpaperwarehouse.com ›

Unit 12: Library Automation Services

Objectives

After studying this unit, you will be able to:

- Discuss an Overview of Library Services
- Generalise Library Services in Automated Environment
- Demonstrate ICT Enabled Library Services

Introduction

Libraries are built and maintained to provide information resources for a specific and defined community. A public library serves the residents of a specific geographic region. An academic library serves the students and faculty of a specific college or university. Special libraries support to achieve organisational goals by serving the members. Corporate libraries serve the commercial firms. In each case, the library only exists to serve its parent community. Each library performs three basic functions in the process of serving its community – selecting and collecting information, organising information, and serving users.

12.1 Overview of Library Services

The primary objective of a library, irrespective of type or size, is to promote the use of its resources. Library services bring together the document or information sources and their users by personal efforts of the library staff. User's information requirement depends upon the purpose for which he/she is seeking information. Library services satisfy information need of users through dissemination of information resources. The information dissemination activities may be accomplished in two ways – on the basis of expressed demands or in anticipation. In this section we will study different facets of library services.

We are utilising ICT as a tool to serve our users right information at the right time.

Example: Library Management Software (LMS), Internet, Telecommunication etc.

The father of reference and information services, suggested in 1876 four basic functions in the area of library services:

- *Instructing the User:* It is intended to help users to learn how a library is organised so that they could take advantage of knowledge contained in information resources.

- *Assisting the user with his/her Queries:* It is intended to provide reference and information services that involve either finding the required information on behalf of the users, or assisting the users in finding information.

- *Aiding the users in Selection of Good Works:* It is the link between librarian's knowledge of the collections and needs of the users. It is intended to guide users in selecting the most appropriate information sources and services.

- *Promoting the Library within the Community:* It is intended to relate the activities of the library to the needs of its parent community. It helps to make the library visible in the community. The success of any library depends on the recognition by the parent community.

> *Notes* Over a century has passed; these four functions remain the core of reference and information services in today's digital environment.

ICT is a medium and a tool that enables the organisation and dissemination of information. It is a conduit for the delivery of information from providers to users. The collaboration between reference librarians and technology experts provides software solutions for online reference and information services (such as LSSI's electronic reference software and Endeavour's Encompass) to support:

- *Immediacy:* To help users to receive quick library services at any time of day or night, any and every day of the week.

- *Interactivity:* To help users to follow-up responses.

- *Personalisation:* To help users to receive information package in the way they want.

- *Mobility:* To help users to access library services from any Internet connected computer at anywhere and anytime. The wireless telephony and wireless computing will increase the value of mobility in future.

12.1.1 Information Sources, Resources and Services

A document gives information or facts. Documents are records of human observations and thoughts, available in many forms and formats. A document in any form can be a source of information. Information sources have two components: conduit (the physical facilities used for gathering, storing, processing and distributing information) and content (the information sources and elements). Information sources become information resources when these are organised and institutionalised in some way, and can thus be reused. Libraries perform the following activities for optimum use of information sources (Levitan, 1982):

- Develop access mechanism to information sources;

- Provide seamless access to resources;

- Manage and maintain resources;

- Design, develop and disseminate information products and services; and

- Repackage and distribute its products and services;

Information sources can be categorised on the basis of their physical forms, information contents, nature of presentation etc. A library should organise information sources to provide services to users. Library services may be provided in anticipation or rendered in response to specific query/request.

⚠

Caution Library services should be designed and disseminated keeping in view the information need of users.

12.1.2 Users of Library Services

Libraries are social institutions. Almost all the major human activities like education and training, research and development, industry and business, government administration etc. require active library support. Users of library include students, teachers, researchers, planners, doctors, lawyers, businessmen and people from different walks of the society. Information need of users may vary widely. However, Melvin Voigt showed that there are four types of information requirements or approaches. These are:

- *Current Approach:* It helps user to keep abreast of current developments in his/her areas of interest.

- *Everyday Approach:* It originates from the user's frequent information need in the course of his/her study or investigation.

- *Exhaustive Approach:* It is the user's demand for almost all relevant documents on a subject within the area of interest.

- *Catching-up Approach:* It is the user requirement for a brief but complete picture of the recent developments on a subject outside the area of his/her main interest.

12.1.3 Types of Library Services

Libraries provide a variety of information services to satisfy different information requirements of users.

The major and important library services are:

- *Reference Service:* Reference services help users to locate and obtain specific pieces of information from information sources such as reference books, catalogues, directories, files, abstracting and indexing periodicals, databases (online and CD-ROM) and other reference materials. Library personnel may either help users in searching (direct search) or they themselves do the search for users (delegated search) in online or offline mode.

- *Referral Service:* Referral services aim to refer users to the sources of information such as secondary publications, information units, professional organisations, research institutions and specialists/experts. Such services do not provide the documents or information required by the user for his/her query. Librarians utilise directories and databases on sources, specially designed and developed for rendering referral services.

- *Current Awareness Service (CAS):* CAS satisfies users' current approach to information and thereby keeps them up-to-date in the field of their work. The important characteristics of CAS are as follows:

  ❖ It is a technique of communicating current information to users.

  ❖ It provides latest developments in a subject field and does not provide answer to any specific query.

  ❖ Generally covers a broad subject area and supplements the user's own channel/ media of obtaining information.

  ❖ It is known for the speed and timeliness.

  ❖ It is meant for use before its contents are absorbed by secondary publications like abstracting and indexing journals. CAS may be provided through variety of media and channels such as current awareness lists, current contents, routing of periodicals, list of research in progress and forthcoming meetings/seminars/conferences, newspaper clippings etc. Some commercial publishers and database vendors provide free online CAS through Internet.

  These are:

  ❖ Contents Direct service (Elsevier)

  ❖ IDEAL Alert (Academic Press)

  ❖ Wiley book notification service (Wiley)

  ❖ Book information (Amazon.com)

  ❖ Current contents and ISI altering service (Institute of Scientific Information, Philadelphia – Fee based)

- *Selective Dissemination of Information (SDI) Service:* SDI is a special type of current awareness service. It supplies each user with the references of documents to their predefined areas of interest, selected from document published recently or received during a particular span of time. H. P. Luhn first coined the concept of SDI as a computer mediated information services. The workflow of SDI service is based on the following steps:

  ❖ *Step I – Users' Profile:* In the first step needs and interests of each user or a group of users having similar requirements are ascertained and carefully analysed. These are then expressed in terms of some keywords, collected from an accepted thesaurus. User profile may be stored as a database file in case of computerised SDI.

  ❖ *Step II – Document Profile:* In this step contents of selected documents are analysed and expressed in terms of keywords selected from the same accepted thesaurus. It is necessary for precise matching. This may also be stored as a database file.

❖ *Step III – Matching:* The first two steps are the work of library professionals. This step i.e. matching of two profiles is conducted by computer at regular intervals. The result of matching is then saved as a file in the required format such as text, html etc.

❖ *Step IV – Notification:* This step involves communication of result to the users. Notification may be sent to users through e-mail by attaching the result file or as a hard copy by obtaining printout of the result file(s).

❖ *Step V – Feedback:* SDI includes a mechanism of feedback from the side of users. Generally, a feedback form is sent to each user along with the notification in which he/she has to indicate whether the document really interests him/her, whether he/she needs a copy or why it is of no interest to him/her. On the basis of feedback user's profile is updated regularly.

● *Literature Search Service:* It is an extension of reference service. This service includes the following steps:

❖ Analysis of the search parameters of a query.

❖ Formulation of a suitable strategy for searching different information sources.

❖ Identification and choosing of most appropriate sources to be searched and the order of searching them.

❖ Understanding of retrieval features of online databases and CD-ROM.

● *Document Delivery Service (DDS):* Document delivery is a key element in access to information. Unless the documents required by the user are available to him/her, all the other services are of no use. DDS is a complex process and is concerned with supply of documents to users on demand in required format. All the information services (i.e. CAS, SDI, Literature search etc.) are aimed at guiding users to the documents of their interests. DDS is the last point in this chain of information services that actually locates the required document and supplies it to users in required format.

Did u know? Electronic DDS supports delivery of documents in digitised form at anytime from anywhere.

● *Translation Service:* In the area of science and technology about half of the world's literature is published in languages other than English. Access to non-English literature by people who know English is possible through translations. Translation services thus help in the global access of information. In India, DESIDOC, NISCAIR, IASLIC, ONGC, BARC, BHEL, DRDO laboratories and several wings of the Ministry of Defence and Ministry of Science and Technology provide translation facilities.

12.1.4 Requirements for Library Services

A library must develop information services appropriate to its community. These services should take into account information seeking behaviours, information needs, and service expectations of members of the community. The requirements for design, development and dissemination of library services are:

● *Resources:* Libraries should develop comprehensive information resource collection and formulate collection development policy consistent with the goals of its institution or community.

● *Access:* Libraries should support state of the-art computing and communication methods for accessing information resources by its users.

- *Personnel:* Information services staff should endeavour to communicate effectively with the full range of library's clientele and must have knowledge and preparation appropriate to meet information needs of users.

- *Planning and Policy:* The scope of library services should be based on realistic planning and applicable policies and procedures.

- *Interface:* The user interfaces for online services must support easy navigation and provide links to internal and external online resources.

- *Evaluation:* The library should regularly evaluate its information services to ensure that the services help to achieve institutional goals and those goals reflect the needs and interests of the community served.

Self Assessment

Fill in the blanks:

1. The primary objective of a library is to promote the use of its …………………….

2. …………………… is a medium and a tool that enables the organisation and dissemination of information.

3. …………………… are records of human observations and thoughts, available in many forms and formats.

4. …………………… can be categorised on the basis of their physical forms, information contents, nature of presentation etc.

5. …………………… is the last point in this chain of information services that actually locates the required document and supplies it to users in required format.

12.2 Library Services in Automated Environment

Libraries are always at the forefront of the latest technologies to find new ways to optimise the management of libraries and resources, and to provide improved services. Automated library systems, apart from supporting housekeeping operations and management of information services also act as document management systems. It stores documents in digital form and provide appropriate retrieval mechanisms so that individual documents, or sets of documents can be retrieved against specific query or on any given topic. In some systems, the document may be held in print form or microfiche and only the index is in electronic form. Automated system also monitors the whereabouts of documents so that library staff and customers can be aware of the availability and status of the documents in collection.

Did u know? The range of services offered by automated library systems can be placed into three broad groups – user services, MIS support services and digital media archiving.

12.2.1 User Services

These are designed with a focus on the services to customers and offering real benefits to them. These are:

OPAC Service

Library catalogue is the mirror of library collection. The objectives of library catalogue in an automated setup are to enable a user:

- to locate resources in a file or database as the result of a search using attributes or relationships of the resources;

- to identify a resource (i.e. to confirm that the entity described in a record corresponds to the entity sought or to distinguish between two or more entities with similar characteristics);

- to select specific item that is appropriate to the user's needs (i.e. to choose a resource that meets the user's requirements with respect to content, physical format, and so on or to reject a resource as being inappropriate to the user's needs);

- to acquire or obtain access to an item described (that is to acquire an item through purchase, loan, and so on or to access an item electronically through an online connection to a remote source);

- to navigate a bibliographic database (that is through the logical arrangement of bibliographic information and presentation of clear ways to move around, including presentation of relationships among attributes).

In automated setup access to library collection is provided through Online Public Access Catalogue or OPAC. OPAC of any modern LMS is fully integrated with other modules, accessible through LAN and WAN and allows users:

- to search, either combined or specific for all formats (books, journals, computer files, maps, sound recording, musical scores, visual materials, manuscripts and archival materials);

- to find a range or levels of records (from full bibliographic records to brief, minimal level records);

- to see standard and customised display of records in all status categories (fully catalogued, provisional records, confined copy, on order, in process, lost, withdrawn);

- to know item-level circulation status information in real-time and note of items have special locations (in transit, reserve etc.) or status (recalled, on hold etc.);

- to search multiple words or phrases in one, more than one, or all fields;

- to apply various search operations within and across all fields such as Boolean operators (OR, XOR, NOT, AND), Positional operators (SAME, WITH, NEAR, ADJ) and Relational operators ('less than', 'greater than', 'equal to' etc.);

- to indicate which fields are to be displayed for a retrieved record at the time of display, printing and downloading.

Web-OPAC Service

Web-OPACs are next generation of OPACs. Web-enabled OPACs allow users to search library catalogues and access other services from any client at anywhere at any time. It helps libraries to overcome space and time barrier in accessing services. Any machine with a standard web browser can act as a client because the mechanism does not require installation of any additional client-side software.

Article Indexing Service

Modern automation packages also provide facility to create and index database of articles or papers published in the journals subscribed by the library. The abstracts of papers/articles may also be included in the database. Such a database allows specific and combined searching by author, title, keywords etc. and produces number of user specific services like table of contents

services (by journals), compilation of subject bibliographies and generation of CAS, SDI, etc. in online and off-line mode.

Lending Service

Lending service provides facility to allow books and other library materials to be read elsewhere by users. This service increases the use of library collection. Computerised lending includes following value-added user services:

- Quick issue, return and renewal of books and other library materials;

- Automatic display of document availability and possible date of availability (if issued to others), display or printing of documents borrowed by a member;

- Quick generation of fine receipts;

- Issue of member ID card with photograph;

- Membership history in the form of list of documents issued and returned by a member during his/her membership tenure;

- E-mail reminders for overdue books;

- Reservation of document by users through OPAC/Web-OPAC, if it is on loan;

- Interlibrary loan (ILL) services for documents not available in the local library; and

- RFID and smart card based circulation system allows self-issue and self return of documents, secure use of library resources and personalized access to public domain resources.

Information Service

Library automation package produces lots of general and user specific information services. These are:

- Display of general facts and figures about the library, library rules, contact persons for specific services, library map, library calendar and holidays, etc.;

- Current Awareness Services (CAS) in the form of arrival list of books, journal issues, CD-ROM databases etc.;

- CAS in the form of table of contents of current journal issues;

- Selective Dissemination of Information (SDI) services in the form of report of arrival of books, journals, special journal issues, articles of interests on specific topic(s) selected by individual user;

- SDI in the form of CAD (Contents – Abstracts – Documents) type products;

- Auto e-mailing of all the above mentioned CAS and SDI services;

- Searchable database of community information and items of local interest; and

- Quick compilation of bibliographies on any given topic or author.

Electronic Document Delivery Service

Document delivery has always been at the heart of services offered by libraries. Document delivery needs to embrace the delivery of both print and electronic documents. The mechanisms for deliveries of print documents are already well established. These mechanisms have been

made more efficient through the introduction of electronic document delivery. The document delivery service is an integration of document discovery, the location of a supplier, request and delivery. It takes many forms, deals with variety of formats and involves a number of intermediaries.

Outreach Services

Outreach services aim to automate the processes required to deliver materials to the homebound and other patrons who cannot physically enter the library. Automated library systems also offer community information services in the form of list of names and addresses of local organisations or persons, local leisure facilities, employment etc.

12.2.2 MIS Support Services

Library management software deals with and contains huge amount of data related to documents, staff and users. This database when extracted, summarised and analysed may help various management activities like planning, decision making etc.

Notes Automation packages generate reports (standard and customised) and statistics to help library managers to investigate various management issues.

The important reports and statistics are:

- Reports of item(s) requested by users and supplied by vendors/publishers;

- Reports on order status, overdue items, vendor performance, budget analysis etc.;

- Statistics related to exchange rate and price changes, average item cost etc.;

- Reports on items issued, returned and reserved over a period and transaction history of members;

- Reports and statistics on most frequently issued items and most frequently visited members; and

- Reports on title history for journals and journal usage by members.

Most automated systems offer a set of standard reports relating to transactions in various modules of the system.

Caution Apart from standard reports, library managers require producing ad-hoc reports and customised reports that facilitate statistical analysis of data.

12.2.3 Digital Media Archiving

The digital archiving system enables users to access stored materials in the form of text, image, audio and video clips quickly from their desktop using a web browser. The services of a typical digital media archiving system are as follows:

- It allows full text and metadata based searching of textual information with natural language query;

- It links full text digitised documents with library catalogue;

- It allows receiving and registering published documents from an electronic document management system;

- It enables a user to import files from the user's system and associate them with a set of metadata record within the archive;

- It offers personal information environment (PIE) to users for accessing resources through customised interface; and

- It aims to provide a single layer interface for locally digitised materials, library OPAC, online databases and other electronic information resources.

Self Assessment

State whether the following statements are true or false:

6. Automated library systems only support housekeeping operations and management of information services.

7. Library catalogue is the mirror of library collection.

8. In automated setup access to library collection is provided through Online Public Access Catalogue or OPAC.

9. Web-enabled OPACs allow users to search library catalogues and access other services from any client at anywhere at any time.

10. Lending service provides facility to allow books and other library materials to be read elsewhere by users.

12.3 ICT Enabled Library Services

Library services in general and reference and information services in particular refer to the personal assistance provided to users in pursuit of information. The reference and information services, provided to library users may be categorised into three broad groups:

- Information services that involve either finding the required information on behalf of the users, or assisting users in finding information;

- Instruction in the use of library resources and services; and

- User guidance, in which users are guided in selecting the most appropriate information sources and services (obviously user enquiry can range from the simple fact finding type to complex questions requiring consultation and analysis of numerous information sources).

The increasing availability of electronic information sources, emergence of web based digital libraries and use of desktop based search tools and agents have changed the notion of traditional reference and information services. The whole array of ICT enabled library services are discussed in the following sections.

12.3.1 Database Search Services

Libraries all over the world are finding vital information through online information retrieval services that provide access to thousands of databases containing both bibliographic and primary source information. Databases are also available as discrete datasets on optical discs like CD-ROM, DVD-ROM, etc. Users can either search these databases directly or through intermediaries (such

as library professionals). Databases that are available in libraries for remote access via online search or for local access via CD-ROM/DVD-ROM can be categorised as:

- *Reference Databases:* They refer users to another source such as a document, an organisation, an individual or full text of a document.

- *Source Databases:* Contain original source data and act as one type of electronic document.

- *Formulation:* It involves several decisions regarding sources, fields, what to search for, and the search variants. Users need to select first the database(s) to be searched. A search may be conducted against one or more selected fields in a database but a search on specific fields produces precise search result than one on a complete record. The next task is to write actual search statement.

- *Action:* In this step, a search button needs to be pressed to conduct a search and the user is expected to wait till the search process ends.

- *Review of Result:* In this step, user views the retrieved results by selecting various display options such as size of display, display format, order of items (by author, title, date, etc.) and so on.

Online Database Service

During the past 10 to 15 years, several related data processing and telecommunication technologies have evolved and merged to make fast, reliable and low cost online information services a reality.

CD-ROM Database Service

Optical discs, particularly in the form of CD-ROMs have become important medium for storage and retrieval of information. CD-ROM databases act as alternative information access system to online database services via telecommunication network and www. CD-ROM databases can be accessed in a standalone PC (single user – single CD-ROM) or over CD-ROM network (multiple user – multiple databases). Multiple accesses to CD-ROM databases are provided through network file server or dedicated CD-ROM server or jukebox system.

Notes CD-ROM databases contain bibliographic datasets, catalogues, source databases, reference databases or multimedia databases.

12.3.2 Web-based Information Services

The Internet is a global collection of interlinked computer networks, or a network of networks. It offers a gateway to myriad online databases, library catalogues and collections, software and document archives, in addition to frequently used store-and-forward services such as use net news and e-mail. The resources available in the Internet can be accessed by a number of services such as Telnet, FTP, Gopher and World Wide Web (WWW). The WWW or simply web is the most innovative, the most visible, and the fastest growing part of the Internet. Web supports multimedia, hyperlinking and HTML formatted web pages can invoke programmes (i.e. CGI) to process user supplied data (i.e. Form). Web can be utilised in library services as global publishing platform in two ways. We can link local library resources to the web for global users and we can organise global information resources available in the web for the local users.

Did u know? The web-based information services may be discussed under two broad groups – general web based information services and subject specific web-based information services.

12.3.3 Digital Reference Services

Reference services refer to the personal assistance provided to users in pursuit of information. Reference service has remained the core theme of library profession over the years. The increasing availability of electronic information sources and services through web and digital libraries has altered the notion of traditional library services. The web-enabled reference services have many advantages:

● It combines reference works together at one website and makes them easier to locate;

● It achieves economics of scale in production and development by tackling a number of reference works; and

● It provides a common interface for collection of reference sources and allows meta-searching and cross-collection searching.

The available online reference and information sources may be categorised into three broad groups:

● *Group I:* Reference and information services from publishers, database vendors and specialised institutions

● *Group II:* Reference and information services provided by libraries and/or experts through Internet

● *Group III:* Reference and information services where users need to conduct a search and find information through the web

Task Make a report on trends and future of library services.

Self Assessment

Fill in the blanks:

11. …………………… involves several decisions regarding sources, fields, what to search for, and the search variants.

12. …………………… databases contain bibliographic datasets, catalogues, source databases, reference databases or multimedia databases.

13. The web-based information services may be discussed under two broad groups – general web based information services and …………………… web-based information services.

14. The …………………… reference services combines' reference works together at one website and makes them easier to locate.

15. The …………………… is the most innovative, the most visible, and the fastest growing part of the Internet.

Case Study

Technology-Enhanced Library Services and the Librarian's Identity Crisis in Academic and Research Libraries of India

Libraries across India, as in other parts of the world, are facing sweeping changes on account of the media in which information is generated, transmitted, disseminated and archived due to the increasing presence of electronic formats. There is no doubt that information in electronic form is a potential asset, and that it can be vigorously applied in any environment. The advent and spread of electronic formats has made a major difference in the information processing and service environments in libraries, especially after the emergence of the Internet and Web as the dominant pathway and repository of electronic information resources. In an increasingly networked world, it is possible that universities may be able to take back control of scholarly information, and libraries may risk being cut out of the author-publisher-dissemination loop (Levy 2000). Libraries act as facilitators to provide the right information to the right user at the right time.

Users visit libraries to borrow identified documents, or to take photocopies/printouts of those documents from reference collections or journals not issued out normally. The advent of Web-enabled information resources, such as e-journals, e-books and e-reference sources, and their access through networks has taken the library to the users (instead of the users coming to the library) and a significant amount of information access is now taking place beyond the four walls of the library. In many cases users want a 'pinpointed precision' in the information search process whereas the library attempts for an 'exhaustive recall' to comply with the various ways in which an information source is approached and to satisfy each user's diverse interests. This information overload may cause doubts in the users regarding the relevance of information services as perceived from a professional angle. Along with quantifying use, it is equally important to assess the qualitative attributes of implicit and explicit use and examine the difficulties of users in properly framing their requests for information.

The limitation on the part of library professionals to perceive and represent what is demanded by users in information systems, and the dilemmas of information organization and retrieval to handle these demands must be effectively addressed. Libraries and professionals are equally concerned about the emergence of Internet as an information repository beyond the library's walls, as amply demonstrated by enhanced citations of Web resources. As library acquisitions are falling, information sources are increasing, and a single site library satisfying the user's needs is a doubtful proposition; users are forced to look beyond the library for their information needs. Thus the only option for the libraries is to enter into collaborations, networking and consortia and to reorient their roles as information services and access centres from their previous roles as information warehouses. At the same time, the technical advances resulting from enhanced research in science and technology have made it possible to reduce drastically the time involved in information collection and identification. Also the extra time required in adapting printed information to client service through cumbersome manual routines of classification and cataloguing is considerably reduced by the availability of electronic information, leaving the professionals to concentrate more on tasks to support the extensive teaching and intensive research environment.

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Academic and Research Libraries

The application of computing to library work in India has a history of at least three decades because since the time the computer entered premier academic institutions and selected R&D facilities, it has been explored for improving information processing and management routines. Information technology (IT) enriched library services arrived initially for science and technology (S&T) information handling and for the special libraries attached to research and development (R&D) centres and academic libraries in higher education institutions. In comparison to other libraries, academic and research libraries have better infrastructure and skilled manpower in greater numbers, making them able to offer information services comparable to advanced countries. Like qualified teaching and research personnel and well-equipped laboratories, the right information service is another vital element in the trinity which completes a fruitful academic or research environment.

Market-driven Collaboration

Academic and research libraries, especially in developing countries, are passing through a very challenging phase in their existence due to unfriendly trends in the emerging information market. On the one hand, these libraries are still left with many of the old problems such as poor budgetary support and weak infrastructure, as well as staff in fewer numbers and often with less expertise. But the new information marketing techniques, like the possibilities of delivering and accessing electronic information in diverse channels, force these libraries to be very vigilant and cautious in their approach towards information acquisition and services. Libraries and professionals in India were quick to understand the emerging information environment was forcing their users to depend largely on those resources, which are becoming more expensive day by day due to the rise in production costs, fall in subscriptions and inflationary trends of Indian currency. When individual libraries found that alone they are not in a position to satisfy the information requirements of their clients, they formulated various collaborative arrangements with other libraries such as, interlibrary loan (ILL) services, document delivery services (DDS), resource-sharing, and consortia-based subscriptions.

Present Practices and Emerging Goals

The special libraries attached to research and higher education were lucky enough to garner resources to automate their in-house routine operations and for hosting online public access catalogues (OPACs); some of them also set up facilities to search electronic databases. A few of them evolved the desired infrastructure for Internet surfing, for hosting of full-text database access, and for setting up digital libraries. The major advantage of the progress in computerization is a considerable increase in the amount of information available online. We have experienced that at the start of computer applications only the surrogates (metadata) existed online, but some full-text content has been made accessible online in recent years (online access to all content in the collection will continue to be an unattainable long-cherished dream of librarians). These libraries are experiencing the virtues of electronic information in different forms such as e-journals, e-books, bibliographic/full-text electronic databases on CD-ROMs and through Web access. Due to publishers' 'electronic plus' policies, libraries are able to access electronic versions of printed sources such as journals either for free (with the print subscription) or by paying an additional fee. However the goal these libraries in specialized research and academic centres should have set for themselves is to enhance their information facilities to fully functional digital libraries, comparable with similar facilities in the developed countries.

Cultures and Conflicts Faced by Libraries

The fixed roles suggested by Levy (2000) for researchers, publishers and libraries are either overlapping or changing in the electronic scene. There are cases where an author or a library is acting as electronic publisher, and there are publishers providing a wide variety of information packages beyond the contents of printed journals. The real question is: has the library really lost ground in the emerging information scene? Even the critics will not say so. The concerns expressed are only to revitalize the professional skills of librarians, rejuvenate the style of working and reorient the library towards its rightful place in effective dissemination of information. Maybe the common feeling that the library is a central place in the institution visited everyday by large numbers of users, like any public utility, has lost some ground in the electronic scene. Nonetheless, apart the continuing provision of information services for print sources, the electronic revolution has reaffirmed the library more as an information service and access centre than as an information storehouse.

Technology-enhanced Library Services Technology Advances

The major technology breakthroughs in the context of libraries include:

- Advent of printing press and mass production of printed documents enabled democratization of information. Libraries had a major role in the print era, as no one can own a large number of books on a particular subject whereas libraries by their very purpose concentrated on doing so.

- Microforms helped to preserve less used information in a compact space and as a smoother delivery option for voluminous sources. Libraries had their unchallenged role even in the microform era as the special purpose readers for microfilms and microfiche were costly and exclusively housed in the library.

- The economical and affordable copying technology revolutionised the concept of information use as it spearheaded the trend of owning copies of relevant portions of library (printed) resources. The copying technology freed the user from sitting in the library for long duration for reading, since one can simply get a copy quickly and leave.

- Computing is the biggest technology revolution so far, as it is a major enabler in the information dissemination chain; also it is not a stand-alone technology unlike earlier technologies and can be networked and integrated with a whole lot of other devices and technologies. It not only revolutionized the production of books and microforms but also brought the arrival of online and CD-ROM databases, electronic information resources, Internet and the digital revolution.

Products and Services

Adapting IT for library applications is an ongoing process, right from procuring or developing IT enabled information products through computer aided processing and management to delivering IT-enriched services. Library professionals in India are already exposed to the different offshoots of IT for library organization and information services.

1. *Library Automation Packages:* The availability of a wide variety of library automation software to suit the varied needs of libraries themselves is a reflection of the progress libraries have made in automating the operations of procuring, processing and providing information sources. Procurement is the end of the story for many other software/databases used in a library, whereas library automation systems will open a floodgate of issues. What the vendor provides is a structure to

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build information concerning the collection and users, to conduct various aspects of organizing the collection and offering information services. Thus software needs to be evaluated for its suitability for the target library before purchase. This may include case studies from other libraries using the software, evaluation of hardware and operating system required, computer awareness among staff and users, network as well as computer infrastructure in the institution, and above all estimation of cost and charges for after-sales support. Using suitable software for library automation will significantly reduce manual operations and enable professionals to dedicate more time for professional jobs.

2. *CD-ROM and Electronic Databases:* Due to the poor communication infrastructure prevalent in India and to the immense costs involved, online database services were used only by few institutions. The distribution of the same content of online data repositories subsequently in CD-ROMs made it affordable (minus communication costs) to a larger number of institutions. While the library automation package gave search and access facility to information sources present in the local collection, CD-ROM databases attempted consolidated access irrespective of holdings to the bibliographic data of publications in a discipline. CD-ROM databases have also freed library professionals from conducting searches and allowed the end user to conduct the searches. CD-ROM is so common nowadays that a library holds a good number of them not only for bibliographic, numeric and full-text databases, but also those received along with printed books and other reference sources. Managing and serving these high capacity discs was a problem earlier due to the stand-alone software required, whereas the onset of networking and hard-disk cached solutions provides an effective and functional way to enable access to them through the intranet.

3. *Web:* Since the 1990s, the Internet has changed the dissemination of information, such as electronic copies of traditional paper-based journals and conference proceedings, free electronic-only refereed journals, haphazard copies of all kinds of material on home pages and a handful of electronic preprints archives (Bjork and Turk 2000). Most libraries in India now have a website and they use the site to present the basic strengths of the library and to host services such as the OPAC and Web access to electronic information. The 'size of the catalogue card' and the field lengths of primitive database technology are surpassed in the Web era. Types of information resources on the Web also vary from authentic primary information about the latest research results to ephemeral product catalogues. Issues worth consideration are often the content of the sites that are deleted, modified or changed to new machines without proper redirection and the extraction mechanism through search engines, when a flood of sources is retrieved against a query, of which few are relevant. The Internet and Web demonstrate that a large amount of electronic information can be hosted in a decentralized fashion in a cost-effective manner. The Web has also freed the user's dependence on library resources for finding information related to address and contact details of a person/institution, contents pages of books, journals, etc. As far as possible, especially for reference and information services, looking at the Web has become an innovative trend in the reference service to complement dated print sources. Many publishers visibly feel the benefits and reach of the Web, and have considered it as an alternate medium for delivering information sources; some publishers even permit unrestricted access of tables of contents and abstracts of their primary journals. As a result of these initiatives, the 'print and distribute' paradigm is challenged by 'distribute and print' paradigm.

4. *Digital Libraries:* Libraries in India are engaged in the development of prototypes of digital information resources, as influenced by developments in other countries.

There are certain types of content which lie inaccessible or less used in their present physical forms that can be put to more visible and enhanced use through digitization. Also heavily used content presently available in limited numbers of copies can be identified for conversion to electronic format. The linear text in many of the print sources presents difficulties for providing a hypertext approach or a multimedia feeling, for simulating learning by doing; sustaining attention and interest for long duration calls for using electronic technologies to enable content to be more functional. The static content in printed sources fails to attract users who are increasingly exposed to the widely appealing features of broadcasting and IT-intensive presentation tools. Multimedia-enabled digital information will be useful to a large percentage of illiterate and older population also. There are cases such as papers in journals and conferences in print form that never get their deserved visibility and often end up without reaching the target population. The digital dissemination of this content may lead to very effective teaching and more focused research in most areas. To demonstrate the efficacy of digital libraries and collections, libraries must be able to identify materials in the public domain, sources generated in-house, and similar materials to overcome the constraints of copyright.

Culture and Conflicts Faced by Users

Searching for manual sources required scanning catalogue cards or indexing and abstracting sources. As cross-references often increase the number of cards or pages, there was a difficulty in being very exhaustive. Conducting selective dissemination of information (SDI) services had been extremely difficult as the document profiles must be matched with user profiles with the aid of semi-mechanical systems. Most of these limitations are easily eliminated in the electronic environment due to the very nature of information processing and organization in electronic form. The inherent advantages of indexing electronic information help the user to search for any or all the fields in a timesaving manner. Since document profiles are already stored in the database and search software supports creation of user profiles, current awareness services (CAS) and SDI services are achieved more easily. The concern for end-user searching was dominant right from the beginning of early CD-ROM database systems since the time spent for searching does not involve communication costs as is the case with online searching. Also with the universe of knowledge getting increasingly complex as a result of continuing advances in research in intra and inter-disciplinary areas, vitiating the search conducted by a generalist like a librarian may not be effective in amassing the user's information requirements completely or not achieving the desired results expected by the user.

The convoluted information requirements of present day researchers require sufficient knowledge of their disciplines and since the users are increasingly exposed to the computerized work environment, they feel very confident to conduct information searching on electronic systems. The professional ethos and egos also plays a part as users find more satisfactory results from electronic systems than manual systems, and in a relatively easy and convenient way. The librarians should recognize the confidence and maturity of users to conduct searches on their own as they have better knowledge of their disciplines, more exposure to the different keywords and their relationships and because of the inherent advantages of locating related sources serendipitously while scanning the retrieved results. There should be closer interaction and effective communication between library professionals and users to understand each other's views about information needs and use. Library user meetings, orientation sessions for new users, special help for research scholars, training programmes about usage of print and electronic resources, a help desk at reference counter, holdings locator services, interacting with users through phone and email, encouraging users to approach the librarian, ask a librarian, and user friendly websites are some options practiced in libraries in India.

The Librarian's Identity Crisis

As stated previously, the students, faculty, curriculum and training methodology at the library schools have to be visibly improved to meet the challenges posed by electronic information and impatient, highly demanding users. There are also problems of infrastructure and a directionless attitude in the teaching and research sector often forgetting the interdisciplinary aspect of the subject. Working librarians have good exposure to new databases, their acquisition and use, pragmatic implementation of various routines etc., which are not accessible to library schools. Thus apart from teaching faculty, expert practitioners in the discipline would also be involved in education programs to bridge the gap between preaching and practice. The existing courses must always look at the sweeping changes in the library workplace and adapt well to enable the students to face the challenges with confidence, giving ample opportunities for improving reasoning, communication skills, general awareness, and other characteristics identified for a multi-tasking service organization. The age-old teacher-centric teaching has to be circumvented by student oriented and professional (job)-centric teaching.

Cultures and Conflicts Faced by Librarians

Gone are the days of close-minded librarians and the quality of candidates entering the profession is continuously improving. As technology-intensive librarianship is gaining ground in the country, working librarians are getting much exposure to new technology tools for providing better information products and improved information services. Working librarians in at least the major academic and research institutions have better computer infrastructure and possess better expertise on the latest information products and services. It is quite natural in the emerging print plus electronic hybrid library scenario that a library professional right from first job is expected to be conversant with the electronic apart from the manual means of information collection, processing, management and servicing. But there are also apprehensions about the level of technology appropriate to conducting well in the challenging and demanding academic and research setup.

A library professional must be distinct from a computer professional due to the very nature of their profession and the expected deliverables. But the acute emphasis on technology has created a situation that a professional can hide many of his/her professional ignorance by a little computer knowledge which is not going to be good either for the profession or for the libraries. Google cannot and will not be replacing libraries because both can co-exist with their diverse functionalities catching the attention of users at different occasions. The professional nature of the librarian's job always motivates him or her to help the users unlike administrative staff in the institution who are always rule-based; sometimes this may lead to not so proper upkeep of administrative procedures and records, and in some cases cause unnecessary rivalry with the administrative staff.

There are also personnel problems as the librarians fail to command a leadership role in many institutions thereby eclipsing their role in strategic planning. Institutions attach prime importance to libraries but are they doing the same towards the personnel in their libraries? It is a strange case of all the virtues are of the system and the problems are due to the staff. Largely a service wing in many institutions, not enjoying the power, visibility, service conditions, and career prospects of the research and teaching staff, the status of library professionals in many of these institutions is not a morale booster, leaving many of them underperforming. It is not uncommon to see non-professionals heading many libraries, maybe just because they are senior teachers or good administrators or researchers and not because they are good as librarians. There are also problems of the lack of a peer group in the profession resisting such attacks on the profession as many senior professionals have become self-centred, and professional associations compete for minor issues.

The professional staff members working in many libraries in developing countries are totally engrossed in administrative and routine jobs related to library operation and administration. Many institutions do not demand their library professionals to pursue an offensive role.

The users always need quick services and they never respond to any of the reasonable operational or managerial delays. The real situation is that the libraries have very little control over their suppliers whereas their consumers have too much control over them. Users are not patient enough to interact constantly with the library staff to tune their profiles to improve the relevance of information services, maybe due to time constraints on their parts. Again by a rough assessment, it seems that less than 10% of the users usually respond to SDI results and the remaining are either using it as it is or rejecting it straightaway. Out of those responding, only a few show their willingness to give feedback to modify their keywords to improve the utility of such services. Users may sometimes get so arrogant with the helpful nature of library staff and doubt it as their weakness.

Questions

1. Write down the case facts.

2. What do you infer from it?

Source: http://www.librijournal.org/pdf/2007-2pp100-109.pdf

12.4 Summary

- Library services bring together the document or information sources and their users by personal efforts of the library staff. User's information requirement depends upon the purpose for which he/she is seeking information.

- ICT is a medium and a tool that enables the organisation and dissemination of information. It is a conduit for the delivery of information from providers to users.

- A document in any form can be a source of information. Information sources have two components: conduit (the physical facilities used for gathering, storing, processing and distributing information) and content (the information sources and elements).

- Users of library include students, teachers, researchers, planners, doctors, lawyers, businessmen and people from different walks of the society. Information need of users may vary widely.

- SDI is a special type of current awareness service. It supplies each user with the references of documents to their predefined areas of interest, selected from document published recently or received during a particular span of time.

- Automated library systems, apart from supporting housekeeping operations and management of information services also act as document management systems.

- In automated setup access to library collection is provided through Online Public Access Catalogue or OPAC.

- Library management software deals with and contains huge amount of data related to documents, staff and users.

- The digital archiving system enables users to access stored materials in the form of text, image, audio and video clips quickly from their desktop using a web browser.

- Library services in general and reference and information services in particular refer to the personal assistance provided to users in pursuit of information.

● Databases are also available as discrete datasets on optical discs like CD-ROM, DVD-ROM, etc. Users can either search these databases directly or through intermediaries (such as library professionals).

12.5 Keywords

Current Awareness Service: A service intended to keep the users posted with the latest information on a particular field.

Digital Library: A managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network.

Digital Reference: Reference services to patrons anytime and anywhere by using computer and communications technology.

Information Resources: Information resources are those sources that are institutionalised so that they can be reused.

Literature Search: A systematic search for literature in any form on a particular topic.

Personal Information: It is a kind of portal technology that creates Environment personalised and customised information access mechanism for users.

Responsive Services: Reference and information services given on request to individuals.

Subjects Gateways: Web based information service that selects and organises valuable subject specific information available on the web through customised interface.

Virtual Reference Service: Internet based reference and information service that connects users with experts.

12.6 Review Questions

1. What are information sources?

2. Discuss the variety of information sources.

3. Explain the workflow of SDI service.

4. What are the categories of users and kinds of library services?

5. What are the advantages of digital media archiving?

6. Discuss the use of Internet in library services.

7. Elaborate the process of dissemination of information services in computerised library systems.

8. Give information services by utilising digital resources.

Answers: Self Assessment

1.	Resources	2.	ICT
3.	Documents	4.	Information sources
5.	DDS	6.	False
7.	True	8.	True
9.	True	10.	True

11. Formulation

12. CD-ROM

13. Subject specific

14. Web-enabled

15. WWW

12.7 Further Readings

Books

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Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Online links

dspace.thapar.edu:8080/dspace/.../ICT+Enabled+Library+Services.doc

www.apc.org/en/.../14-new-public-library-services-using-ict-developme

www.eifl.net/library-service-enables-children-practise-their-ic

Unit 13: Computerization in Information Services

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Objectives

After studying this unit, you will be able to:

- Explore the Areas and Application of Information Technology to Library Services

- Discuss the Impact of IT on Libraries

- Explain the Meaning and Use of Internet

- Discuss the Virtual Library

Introduction

Computer technology in libraries has revolutionised the concept of rapid and accurate information services. Technology encompasses in its ambit – acquisition, processing, storage, and dissemination of various types of information via computers and telecommunication. Information technology [IT] has become pervasive in all walks of life. IT has bridged minds over miles. Changing technology is driving the next wave of economic growth. In order to reap the benefits of the technology, we have to not only apply new technology but also new thinking.

Data are the basic building blocks of the information economy and knowledge-based business. This data was received by the user in forms of words, numbers, sounds, and images. This data is

converted to information by arranging into meaningful patterns and knowledge which helps in application and productive use of information. In the near future, knowledge shall supersede information as information superseded data earlier. This is the need of the hour and this is made possible by the amazing IT products and tools. The advent, rapid successions, and subsequent widespread use of information technology has completely revolutionized the way information is generated, stored, acquired, accessed, retrieved, communicated, and broadcasted. The continuing new developments in IT is bringing us to a new arena that nobody could have even imagined a few decades back IT has made great impact on Library and Information Science [LIS] field with numerous products of new information technology finding their applications in the libraries.

13.1 Areas and Application of Information Technology to Library Services

A modern library cannot be imagined without the application of computers. In the library and information centres computers can be used for performing efficiently all sorts of jobs from the procurement of the reading materials to their organization and use. So, it can serve as a remedy for all the existing problems of libraries and information centres. But, till now computers have been used successfully in the following areas of library activities.

13.1.1 Library House Keeping Operation

In case of library housekeeping operation, the computer is used for acquisition of books and other reading materials, their classification, cataloguing, circulation and serial control.

(a) *Acquisition:* The selection of materials can be made by the computer. Any library which is a part of online computerized library system has access to catalogue entries and bibliographic data of all the libraries in the system. These databases can be used as a selection tools to purchase new documents for the particular library in question. Other offline databases can also be used as selection tools for non-current documents and sometimes out of print books. For other documents, conventional book selection methods may be used. The MARC bibliographic record service has opened up a new vista in both cataloguing and bibliographic database that can be used as a book selection tool.

The ordering and acquisition are the routine jobs in the library and for a single time ordering it requires repetitive operation by different sections. These repetitive operations and the requisite checking can very well be done by the application of the computer system.

Notes Both offline and online acquisition can be performed by the use of computers.

(b) *Classification:* A computer based classification system is being experimented at the Documentation Research and Training Centre, Bangalore. It is based on Colon Classification System.

(c) *Cataloguing:* The computerized cataloguing system operates with high speed for performing routine and repetitive jobs. Besides, in the cataloguing unit, computer can also be used in various other ways such as producing book plates, book pockets, book cards, spine labels, etc. It can also produce a variety of records, card catalogues in the book form, printed catalogue, etc. as by products. The following uses of computer in cataloguing have already been able to draw the attention of the librarians.

The MARC project was started in November, 1965 by the Library of Congress, USA. The latest development in the system includes the CoMARC (Co-operative Machine Readable Cataloguing). Computer Output Microfilm (COM) was developed in the USA by Stromberg Carlson Company. The Online Computer Library Center (OCLC), previously known as the Ohio College Library Centre was started in August 1970. All these have successfully used computers for cataloguing of documents.

(d) *Serial Control:* Serials are continuing publication having reasonably permanent titles and appearing usually at regular intervals. Their contents usually vary from issue to issue. An article as a single bibliographic unit may be published in more than one issue and even in more than one volume. Obviously, the users may be interested in an issue of a serial as a bibliographic unit, or an article spread over a number of issues as a bibliographic unit. So, serial control comprises complex operations of library activities because of the very nature and characteristics of Serial as library material. Again, the conflict between the physical unit and the bibliographic unit makes Serial control a complex task.

In case of Serial, the current issues, the retrospective or immediate back issues and bound volumes under every year of publication is an ongoing process. In this case, the library should encounter the search problem because of the conflict between the title and the corporate body, the old titles and the changed titles, nature of irregularity in publication (more than one issue in a single publication and the like).

These situations pose the problem of listing, acquisition, accessioning, cataloguing and creation of records in the desired format.

(e) *Circulation:* The circulation activities are the life-stream of the library services. The library documents are for use and are intended for the users. At various points, documents are to be trapped for the users who have recorded their priority in using such documents.

⚠

Caution The circulation is a flow of document, but the flow should be controlled by library operations so as to serve the users in the best possible way with the available materials in the library.

13.1.2 Library Administrations

In case of library administration, the library automation helps in

(a) providing Access Right to Staff Members,

(b) providing Access Right to Library Users,

(c) exception Reporting, and

(d) generation of Library Statistics/Report.

13.1.3 Application of IT to Library Services

In libraries, several systems have been developed for their various house-keeping chores and more still are being designed and refined, due to the technology of large-scale integration. These are known as microcomputers; designed to handle any of the library processes like acquisitions, cataloguing, serials control, circulation control, bibliographic control, or Selective Dissemination of Information (SDI). IT is applied to the operation of libraries and information centres to ensure that information delivered is timely, accurate, precise and relevant. The concept, Library Automation, thus became popular and of which Cobin (1985) explained that "in the traditional manual library system, staff perform the various tasks required to complete each

operation, but if a computer is used to perform some processing operations, an automated library results". Bierman (1980) in Madu (2002) defined library automation as "the use of computers and associated technology to do exactly what has been done in libraries with the justification of reduced cost and or increased performance. Thus, automation helps in the acquisitions, organization, storage and dissemination of information in libraries. Generally, IT applies to library services in a number of ways, which include: Acquisitions, Cataloguing, Circulation, Serials and User Services.

Task   Make a report on the use of computer in library administration.

Self Assessment

Fill in the blanks:

1. In the library and information centres, …………………… can be used for performing efficiently all sorts of jobs.

2. The …………………… bibliographic record service has opened up a new vista in both cataloguing and bibliographic database that can be used as a book selection tool.

3. A computer based …………………… system is being experimented at the Documentation Research and Training Centre.

4. …………………… are continuing publication having reasonably permanent titles and appearing usually at regular intervals.

13.2 Impact of IT on Libraries

"Computers are forcing us into an age in which we may have to take action before we understand the consequences of action"

—Jacques Vallee

Information technology (IT) has become pervasive in all walks of life; as such libraries and information centres are no exception. The most important component of IT is information rather than technology. Information has come to be seen as the fundamental currency of human activity. For libraries and information services, information is their reason for existence so it is all the more important that they should treat information as their most strategic asset. Information technology can no longer be seen simply as an addition to the existing range of services but must be viewed as the central backbone of the library services. An IT strategy is thus viewed essential for making the most effective use of information assets in the library.

It is said that more information is being generated than consumed. This being the situation, many important sources get by-passed, if efficient data management systems are not in operation. Secondly, the economics of information has also creeped up. The spiralling cost of publications necessitates the application of efficient data management systems. The automation of libraries for effective data management, and their networking for resource sharing have become an indispensable task. One cannot really survive for long and shall become history if active participation and changes with the change are not brought out in the library system.

In order to realize the vision of effective library management systems, good software besides the hardware is a pre-requisite to automate day-to-day functions and participate in networking projects.

Libraries, which until recent times were essentially stacking print material, have now begun to acquire electronic media like CD-ROMs and multimedia packages. In coming years, libraries will have to prepare themselves for conversion to electronic libraries, commonly referred to as digital libraries. The beginning has been made in India also, to convert hard catalogue records in machine readable form and provision for electronic based services has also been initiated.

Libraries, as intermediaries, are dependent upon the actions of suppliers of information on the one hand and users of information on the other. The libraries have to build into their future strategies the concept of continual change. They may be required or expected to operate and make provisions for more sophisticated and integrated options. Some such options could be:

- Connect into more networks.

- Provide more ways for their users to access information.

- Offer a wider range of services.

- Be prepared to take on more functions.

- Be well-established organizers of information in counteracting confusion and uncertainty.

- Be advisers and helpers in the information process, which will be in more demand than ever.

- Continue to introduce innovative technologies to improve services and facilities.

- Make provision for users to plug portable devices into library networks.

- Provide multifunctional terminals for users.

- Have servers accessible via the Internet.

- Provide access to the Internet as a routine service.

- Provide necessary skills to organize the internal information resources of the parent organization.

- Be prepared to provide a wider range of communication facilities in the future, allowing users to communicate more effectively with the library, with each other and with the external world.

- May not need to plan for ever-increasing storage of physical materials.

- Consider the most effective ways of helping their users to navigate through the mass of electronic information available to them.

- Help users by developing better information retrieval tools based upon knowledge of user preferences.

- Consider making available a wider range of electronic media to users in future.

- Make provision on their networks for devices that can read the new media at convenient points.

- Play the role of gateways to external systems, providing access to information over which they have no ownership rights and little control.

- Consider subscription to Internet-based services for their users as an alternative due to spiralling cost of certain products in physical format.

- Provide services for remote users who may or cannot visit the site physically.

- Offer something more than can be obtained by users at home, thereby making their services effective enough to attract users away from alternative information providers.

- Provide remote access to their networks through a variety of technologies and may be demands for such devices to be made available for users.

- Design policies to deal with enquiries from global users.

- Make provision for providing global access to the unique resources in case of special collections available at various libraries and information centres.

- Learn to compete effectively with other organization if they are to survive in the future.

- Lastly, commit themselves fully to the increasing use of IT in the future and develop strategies to make the best use of IT for their users.

13.2.1 Impact on Techniques

Let us discuss the impact of IT on Techniques:

Preservation and Storage

It is difficult to preserve all the different storage media, whether paper, tapes, video or discs, partly because knowledge about their durability (except for that of paper) is relatively limited. To this should be added the fact that the old media require some kind of playing device to access their contents, and these devices are disappearing from the market because there is less and less demand for them and spare parts cannot be found. Digitalization of print, images and sound provides new opportunities for preservation and storage, but the durability of the digitized media is also an unknown quantity. It is, however, possible to provide access to the contents of documents in archives via digitalization, thus avoiding the wear and tear on and possible damage to the original document. The digital media are really rather new, and no general regulations and standards for their use as preservation media have yet been established.

Searching Tools

One of the first uses of computerization was for the compilation of library catalogues. At first computers were used as a part of the printing process, and later they entered into the process of designing on-line catalogues. Large indexes and abstract publications have followed a similar path, going from print, to print via computer, to on line and to CD-ROM. Computer technology has also led to the development of search tools such as citation indexes and concordances which are produced automatically. A number of search processes, such as Boolean operators, have been developed and refined over the last few years. They are very expensive, as are the connect-time prices for the databases. For many libraries the prices are prohibitive and one of the ways to solve the problem is to write contracts between the vendors and all the libraries in a country or with large groups of non-commercial institutions. Such types of negotiations, which also cover vendors of electronic periodicals and other products, will be of growing importance to the information services institutions in the future.

Use of Full Text Documents, Sound and Images

The data storage capacity of computers has made it possible to store not only the bibliographic data on a publication, but the full text of the publication itself. Older, originally printed or even hand-written texts are scanned and digitized, thereby making the works of great authors available to all. The texts can be read page by page or, by searching with a combination of words, certain parts can be selected.

One of the major problems for the information services institutions in relation to full text documents, sound recordings and images is the complexity of copyright issues. In most countries,

copyright regulations have developed over the centuries, and the use of printed material by libraries is adequately regulated for all parties. However, as far as the digital media are concerned, there are no such fixed practical arrangements, not only because of the short time they have been in existence, but also because of the difficulties of protecting against unlawful copying. Huge sums of money are involved in this area and private copying is very easy and fairly cheap as the technique is rather simple.

Electronic Journals

In the first edition of the Directory of Electronic Journals, Newsletters and Academic Discussion, published in 1991, there were 27 electronic periodicals, seven of which were peer-reviewed. The 1997 edition lists 2500 periodicals of which more than 1000 were peer-reviewed.

Electronic periodical services were offered by the large agents in 1997. Swets and Zeitlinger has already been mentioned as the agent in the United Kingdom project; Blackwell is also offering such services, as is Reed Elsevier, the largest publisher of scientific periodicals, but only for its own periodicals. The Electronics Collections Online full text database of the On-line Computer Library Centre (OCLC), also introduced in 1997, is a Web-based service containing more than 1000 periodicals from 30 publishers.

Records Management

All administrative routines in the information services institutions can be automatized. Both documents and users can be identified with pin-codes; documents can be ordered automatically and bills for on-line searches are printed out by the computer. All these operations have an archive-related dimension, as institutions need to be able to trace historical data in their files, and public institutions are usually obliged to keep their records for some years before transferring them to the archive system. There is thus a certain demand for back-up systems and for safety copying, in the case of electronic processing. Even the selection of books and other material for library collections is done electronically. Archives must make appropriate choices concerning delivery formats for data, the media on which data are stored and the principles for selection.

13.2.2 Computerization for Libraries

Libraries were very quick to computerize their management systems. Since the invention of Machine-Readable Cataloguing (MARC) in the mid-1960s, many countries have adopted national versions of that format. Nearly all libraries in developed countries are now equipped with computerized management systems, particularly software for cataloguing and lending operations. Computerization is steadily eliminating card indexes in favour of Online Public Access Catalogues (OPAC). In the 1990s, with the development of the Internet and more recently of the Intranet, the distribution of catalogues on CD-ROM is tending to be replaced by direct access via those networks to constantly updated files.

In the last few years, major libraries have begun building up digital collections, either for purposes of conservation or in order to facilitate access to documents that are rare or national treasures. This trend is so powerful that sites devoted to digital collections have been created on the Internet.

13.2.3 Scientific Electronic Publishing

In parallel with commercial electronic publishing, which has been gradually introduced over the last five years by major international publishers (Elsevier, Springer, Academic Press, Kluwer,

etc.), research communities and university libraries are developing electronic publishing facilities for their own scientific production (preprints, theses, symposia) and for distance learning technologies (courses, educational software). These productions are processed in more elaborate formats than the image mode that was preferred for the digitization of paper documents. The formats are of the Standard Generalized Mark-up Language (SGML) type, in particular Hypertext Markup Language (HTML) and Standard Markup Language (SML). The Description of Type of Document (DTD) of the Text Encoding Initiative (TEI) is the basis for all recent operations aimed at classifying academic documents in the social and human sciences in America and in Europe.

13.2.4 Acquisition of Published Electronic Documents

The supply of electronic documents is currently posing a great many problems for libraries. Certain publications appear only in that form, and it is clear that libraries need to acquire them or at least to have access to them. However, the regulations now being introduced regard the acquisition of electronic documents as equivalent to a licence to use the contents, and require a bilateral contract. The legal issues are at present the centre of international attention. In essence, libraries set access to documents via the publisher's server or a service provider which may be a subscription agency (Swets, Dawson, Blackwell's, etc.) or a cooperative network (OCLC, Pica, etc.). The delivery of electronic documents to the local site of a university or consortium of libraries is still at an experimental stage, but seems to be the most promising solution for making use of published scientific literature.

Self Assessment

State whether the following statements are true or false:

5. The most important component of IT is technology rather than information.

6. The libraries have to build into their future strategies the concept of continual change.

7. One of the first uses of computerization was for the compilation of library catalogues.

8. Libraries were very slow to computerize their management systems.

13.3 The Internet

The use of computers is revolutionizing working processes in libraries and archives, and the network of computers known as the Internet, is a revolution of similar importance. It is now possible to retrieve information independently of time zones and geographical location, and to obtain the most up-to-date information, because the printing and editing processes are either no longer necessary or have been considerably reduced.

The system of e-mail provides a communication facility which, to a great extent, replaces the traditional mail and fax systems formerly used by institutions, thus saving time for the user. The World Wide Web (WWW) can be regarded as a huge reference base, with all types of information available, either as metadata or full text, sound and images.

The World Wide Web, which is one part of the Internet, is useful in many daily activities involving the transmitting of information which in the past could be found only in print or by teletext and there are many kinds of useful sources of information for education and research on the Internet. Such activities can be said to have laid the foundations for the worldwide electronic information and communication networks. Individual institutions also have the opportunity to create their own Web sites to inform users about their services and to guide them through the organization. Different Web sites are linked together so that one entry or access point will lead on to several others.

Libraries and their catalogues can also be accessed via the Internet. The most recent Online Public Access Catalogues (OPAC) Directory, published in 1998, which is a guide to catalogues on the Internet, contains 1434 entries worldwide, but 888 are from the United States and most of the remainder from Australia, Canada, New Zealand and Western Europe. Developing countries and Eastern European countries have few or no entries. The information in the guide was collected in the spring of 1996, and since then the number of libraries with Internet-accessible OPACs has grown considerably in Western Europe and Canada.

Example: Denmark had 11 entries in the 1998 guide, all of them university libraries. At the end of that year, there were more than 125 libraries with OPACs in Denmark, and among them, 75 public libraries.

The Internet has made new activities possible. Electronic conferences or informal discussion groups can be arranged with limited or open access, and surfing on the net has become the equivalent of zapping on the television or browsing through the shelves in the library.

The Internet uses sensitive and vulnerable techniques, so there are many possibilities for malfunctioning to occur. This is particularly threatening for institutions serving a great number of users or involved in large and expensive programmes, such as mass digitization, but can also have catastrophic consequences in small institutions. The traffic on the Internet and the number of Web sites are growing exponentially and this leads to problems with queuing and unacceptable answering times.

For the library and archive professions, there are other aspects of the World Wide Web which give rise to problems. The central issue with all electronic documents is that of authenticity. Is there any certainty on the Internet that the document has in fact been produced by the author/ organization that claims to have done so? Is the text today the same as it was yesterday and will it be so tomorrow? A thesis using references to electronic documents, without printing them out, runs the risk that they may be changed at a later date or even cancelled. These problems are being dealt with by specialists who are developing standards for electronic documents.

The second problem is that of searching in large quantities of data, because a search based on one or a few keywords easily leads to several thousand addresses. The search can be refined by using the tools developed for this purpose, such as Boolean operators, language or geographical limitations, provenance, etc. Problems will remain, however, because the Internet is, from this point of view, completely anarchic. Large parts of it are unedited and there are no general rules about the use of vocabulary. Searching in the areas of education and research may result in a large number of opinion papers with no academic quality control whatsoever. Published material in print and other media have usually been through an academic, professional and economic selection process, but this is not true of individual home-made 'information' products. Much development work needs to be carried out by the information profession to address the concept of selectivity. This, however, raises the problem of censorship versus confusion and uselessness.

Self Assessment

Fill in the blanks:

9. The …………………… uses sensitive and vulnerable techniques, so there are many possibilities for malfunctioning to occur.

10. The …………………… can be regarded as a huge reference base, with all types of information available, either as metadata or full text, sound and images.

11. The use of computers is …………………… working processes in libraries and archives.

12. Electronic …………………… groups can be arranged with limited or open access.

13.4 The Virtual Library

The vision of gathering all human knowledge together in one place is very old and has existed in many civilizations.

Example: One example is the library of ancient Alexandria, and another the great encyclopaedic enterprises in the Arabic, Chinese and European civilizations.

The aim is to achieve a total overview of the recorded knowledge, as with the Universal Decimal Classification system, or by means of one large computer. Recently and due to the growth of the Internet, this vision has manifested itself once again in the form of 'the library without walls', or the virtual library.

The assumption is that everybody will obtain instant access to all recorded information in the world through the nearest library. This phenomenon has been described in several ways, and the term 'electronic library' has often been used. Unfortunately, this expression could equally well mean a large database or further developments in library automation, or applications of hypertext on the World Wide Web. The preferred term within the profession is the digital library, which is not just a name for a collection of digitized media. First of all, the term refers to a library, which is not necessarily in a particular building, but a systematic organization where various professional operations, performed by a professional staff and directed towards specific user groups, are carried out. The collection or parts of it might be digitized and access to electronic and other networks provided. One of the most important items in the digital library is metadata, which describe the contents and attributes of the library collection. They are important to the process of searching among millions of documents.

The most prominent example here is the so-called 'Dublin Core' which defines fifteen core elements to be used by authors as well as intermediaries. Another problem is naming, which means strings of characters that uniquely define digital objects and therefore form a part of the documents' metadata. A system of naming must be permanent, and this means that a name cannot be bound up with a specific location. The creation of such a naming or identifier system is organizational, not technical, and different systems have been suggested. Examples are Persistent User Requirement Languages (PURLs) developed by the On-line Computer Library Centre (OCLC), where a server looks up the corresponding Uniform Resource Location (URL) in a database; the Uniform Resource Name (URN) developed by the Internet Engineering Task Force (IETF) but still not in operation; and the Digital Object Identifier system (DOI) developed by the Association of American Publishers and the Corporation for National Research Initiatives. They all provide methods by which digital objects can be identified and accessed. Issues concerning the management of the intellectual property right have given impetus to the development of these systems.

National bibliographies are the cornerstones of the library system and they are facing many problems with electronic documents. Such documents do not have a permanent existence, and a hyper link may lead to an empty address. In principle, a similar problem can occur with printed material, when a card catalogue refers to a document which has been lost or stolen. But the problem takes on a completely new dimension on the Web because of the large number of hyperlinks and the very transient nature of Web pages. A recent pilot project in Sweden aims at testing methods of collecting, preserving and providing access to on-line electronic documents in a way that allows them to be regarded as published. This is done by taking a 'snapshot' of the relevant Hypertext Markup Language (HTML) pages, but concerns only static electronic documents.

Did u know? The Internet is not the virtual library, but constitutes an important part of it. In the library environment a slogan during recent years has been 'from collection to connection'.

This is certainly a very precise description of the development, but the vision of the virtual or the digital library must include 'collection' as well as 'connection'.

Self Assessment

State whether the following statements are true or false:

13. National bibliographies are not the cornerstones of the library system.

14. The aim of Virtual Library is to achieve a total overview of the recorded knowledge.

15. One of the most important items in the digital library is metadata.

16. A system of naming must be temporary.

Case Study **Electronic Publishing in Science**

Electronic journals create added value in publication that has great appeal to scientists and publishers, and the number of electronic journals in science, engineering and medicine – refereed and unrefereed – has increased dramatically in recent years. But electronic publishing, with its greater flexibility and variety of presentation, challenges conventional norms and practices. How will the existing culture and practices associated with publication in science be affected? What standards should apply in the electronic environment?

To explore these and related questions, an international workshop was organized from 12–14 October 1998, under the auspices of the American Association for the Advancement of Science (AAAS), the International Council for Science (ICSU), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) to examine the application of electronic methods to the publication of scientific journals with a view to encouraging the development of internationally recognized practices and standards. The Workshop was intended to build on the work of the international conference of 'Experts on Electronic Publishing in Science' that was convened by ICSU Press and UNESCO in February 1996. A major recommendation emerging from that meeting urged the convening of a forum involving scientists and their organizations 'to formulate codes of ethics and of conduct for electronic publication which would spell out the reciprocal obligations of the scientist and the community on such matters as peer review, citation, integrity and authentication of material and archiving.'

Wide variations in the practices and traditions of scholarly publishing across disciplines suggest caution in attempting to construct generalizations intended to apply broadly. Nevertheless, the Workshop was able to identify a number of issues that merit attention by the scientific community at large. They are the following:

● *Defining a Publication:* Digital processing facilitates the production and preservation of several public versions of a document or scientific paper, and the Workshop

Contd...

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recommended that each publicly available version of a document carry a full specification of its status laid out in a visible and readily understandable manner.

- *Citation:* Because of the possible existence of multiple versions of a document, the Workshop recommended that the scientific community become involved in the development of standardized citation practices that are friendly to science, include appropriate metadata, are capable of automatic assignation and are easy to use.

- *Peer Review:* The ease of publication in electronic media reinforces the case for adequate quality control in terms of both the scientific content and the presentation. Scientific societies and/or journals should therefore establish and distribute guidelines in order to maintain the quality and integrity of the review process.

- *Scientific Misconduct:* Any reduction in the control applicable to electronic publication increases the opportunities for scientific misconduct, such as the falsifying of results and plagiarism, although the technical features of electronic publication (such as the ease of automatic scanning and searching for similarities) raises the chance of detection. Research into the application of electronic methods for the detection of scientific misconduct should therefore be encouraged.

- *Open Access:* The Workshop considered the conflict between the needs of scientists for ready access to large databases and collections of scientific observations, and the requirements of the aggregators for commercial reward for their endeavours. The results of publicly funded research should be clearly recognized as a 'public good', and full and open access to the data collected was essential for scientific advancement. This does not necessarily mean 'free' access by research workers; since the part played by publishers, aggregators, librarians and other facilitator's merits adequate recompense if they are to continue in their valuable roles. The Workshop recommended that the attention of the scientific community, funding agencies and legislators be drawn to the fact that the scientific enterprise is crucially dependent upon the ability of research workers to make use of collections of facts and observations and that measures that limit access to such material are contrary to the public good. Legislators are urged to provide for a mechanism permitting 'fair use' of large databases in order to promote full and open access to critical data for scientific research and education with little adverse effect on the commercial interests of the owner.

- *Privacy:* It is now possible for journal editors and publishers to collect detailed information on the nature of the material accessed and the usage, and to compile author/user profiles. The kind of information being collected should be clearly stated by journal editors and/or publishers, as well as the use to which it is being put. Specific information relating to individuals should not be divulged to anyone without the permission of the subject.

- *Archiving:* A major factor restraining the adoption of electronic methods of publication was the lack of archiving facilities, for there is currently little assurance for authors and publishers that, with the advancement of technology, material issued electronically will remain available and readable in the decades and centuries to come. The establishment of archives, for the long-term preservation of electronic publications, should be encouraged as fundamental to scientific and cultural development.

- *Developing Countries:* Electronic publishing represents a unique opportunity for developing countries to promote the advancement of their scientific communications.

It has the potential for improving access to the world literature, for filling gaps in local collections and for improving the visibility of their own scientific contributions.

Questions

1. Explain about the electronic journals.

2. Discuss the issues that merit attention by the scientific community.

Source: AAAS/UNESCO/ICSU Workshop on Developing Practices and Standards for Electronic Publishing in Science, Final Report, www.aaas.org/spp/dspp/sfrl/projects/epub/report.htm

13.5 Summary

- In the library and information centres computers can be used for performing efficiently all sorts of jobs from the procurement of the reading materials to their organization and use.

- Any library which is a part of online computerized library system has access to catalogue entries and bibliographic data of all the libraries in the system.

- The MARC project was started in November, 1965 by the Library of Congress, USA.

- Serial control comprises complex operations of library activities because of the very nature and characteristics of Serial as library material.

- The circulation activities are the life-stream of the library services.

- In libraries, several systems have been developed for their various house-keeping chores and more still are being designed and refined, due to the technology of large-scale integration.

- An IT strategy is viewed essential for making the most effective use of information assets in the library.

- Libraries, as intermediaries, are dependent upon the actions of suppliers of information on the one hand and users of information on the other.

- Libraries were very quick to computerize their management systems.

- The use of computers is revolutionizing working processes in libraries and archives, and the network of computers known as the Internet, is a revolution of similar importance.

- The Internet has made new activities possible.

13.6 Keywords

Acquisition: Taking possession of an asset by purchase.

Administration: Administration is the interpretation and implementation of the policy set by an organisation characterised by control.

Digital Object Identifier: A digital object identifier (DOI) is a character string (a "digital identifier") used to uniquely identify an object such as an electronic document.

Electronic Journals: Electronic journals, also known as ejournals, e-journals, and electronic serials, are scholarly journals or intellectual magazines that can be accessed via electronic transmission.

Electronic Publishing: Electronic publishing (also referred to as ePublishing or digital publishing) includes the digital publication of e-books, EPUBs, Digital Magazines (also sometimes known as electronic articles), and the development of digital libraries and catalogues.

Housekeeping: Housekeeping refers to the management of duties and chores involved in the running of a household.

Information Technology: Information technology (IT) is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business or other enterprise.

Internet: A means of connecting a computer to any other computer anywhere in the world via dedicated routers and servers.

Online Public Access Catalogues (OPAC): An online public access catalogue (often abbreviated as OPAC or simply library catalogue) is an online database of materials held by a library or group of libraries.

Storage: Storage refers to memory locations used for reading and writing data.

Techniques: A systematic procedure, formula, or routine by which a task is accomplished.

Technology: Technology is the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, and methods of organization, in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input/output relation or perform a specific function.

Uniform Resource Location: A uniform resource locator, abbreviated URL, also known as web address, is a specific character string that constitutes a reference to a resource.

Virtual Library: A virtual library is a digital space that holds and organizes virtual books and documents.

World Wide Web: The World Wide Web (abbreviated as WWW or W3, commonly known as the web), is a system of interlinked hypertext documents accessed via the Internet.

13.7 Review Questions

1. What are various options that libraries need to make provision for in order to operate in this electronic information era?

2. How is IT useful for libraries?

3. IT has bridged miles over minds. Elaborate this statement.

4. Discuss Library House Keeping Operation.

5. How library automation help in library administration?

6. Describe the impact of IT on Techniques.

7. What is Scientific Electronic Publishing?

8. "The use of computers is revolutionizing working processes in libraries." Elucidate.

9. Write brief note on Virtual Library.

Answers: Self Assessment

1.	Computers	2.	MARC
3.	Classification	4.	Serials
5.	False	6.	True
7.	True	8.	False

9. Internet

10. World Wide Web (WWW)

11. Revolutionizing

12. Conferences or Informal Discussion

13. False

14. True

15. True

16. False

13.8 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

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Online links

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Unit 14: Current Awareness Services (CAS)

Objectives

After studying this unit, you will be able to:

- Discuss the meaning of Current Awareness Services (CAS)

- Explain the advantages and disadvantages of CAS

- Describe the Selective Dissemination of Information (SDI) service

- Discuss the online procedures of SDI service

Introduction

If you are part of a project, have an ongoing professional interest in a topic or have a responsibility to keep your team up to date with the latest research you need to use Current Awareness Services. Current Awareness Services send information about the latest publications to you via e-mail or over the web. Services are provided by libraries and organisations that have a remit to promote the use of good current information. These services do require an investment of time to set up, register online or add to your RSS Reader. Once set up they run in the background delivering information to you on a regular basis.

14.1 Meaning of Current Awareness Services (CAS)

Current awareness service has been defined by a number of library and information science professionals but none seems to be universally accepted. Traditional definitions of CAS "it is a system or publication for reviewing newly available documents, selecting items relevant to the

needs of an individual or group, and recording them so that notifications may be sent to those individuals or groups to whose needs they are related".

According to S.R. Ranganathan "Service listing the document appearing during a period covered and without being selected to suit the requirement of a reader or a specific topic under investigation".

Alerts of items in a library user's areas of interest; a publication, or a system designed by librarians, to alert readers and researchers to recently published literature in a field, or on a specific topic.

Example: The table of contents for new issues of selected journals or new search results for a specified query is e-mailed to a user.

Current awareness services assist you with keeping up-to-date with new publications in your subject area. For example, most journal indexes and databases allow you to set up a profile where your search can be automatically run periodically and the results emailed to you. Most databases also allow you to set up alerts to email you the table of contents of a journal each time that a new issue is published and added to the database.

A number of different services are available:

- *Journal alerts* – It receive the table of contents each time an issue is published, or save a search for a topic and have it run automatically every day, week or month.

- *Book alerts* – It find out about new books purchased by the Library or set up alerts to find out about new books published around the world.

- *Web alerts* – To be notified of new or changed web pages, the same as you can for Journal articles and books.

- *Citation Alerts* – It find out when someone has cited an article of interest.

- *Discussion Lists* – Discussion list use email to communicate with a group of people with similar interests.

- *Conferences* – To be notified of upcoming conferences and calls for papers.

- *RSS feeds* – It use software that allows you to gather the RSS feeds from various sites and then displays them for you to read.

- *FYI* – This page provides some hints and tips on how to manage current awareness services.

Caution Not all current awareness services used to be run this way; technology has improved the library staff workload of providing a current awareness service.

Information seekers use the following conventional channels to know the current developments in their areas of interest:

- Communication, oral or written, received from colleague working in similar area of research.

- Regular scanning of current awareness lists such as list of additions, forthcoming or current contents, etc. brought out by various agencies and primary sources of information received in libraries/information centres.

- Preprints received from authors.

- Reviews of publications appeared in primary sources.

- Attending meetings, symposia, conferences, etc. and through exchange of information during personal discussions.

- Laboratory notes, technical records.

- Information received through newspaper, e-mail, bulletin board, internet, etc.

- Alerting services received from professional agencies.

Besides, the above, there are many other sources and channels from where current information is received by the information seekers regularly. Every professional, be they information scientists, lawyers, doctors, engineers, technologists, managers, academicians, whether in marketing, business, teaching or research work, need to be aware of changes in the environment.

A variety of CAS can be found on the WWW, including the following: tables of contents services, book-alerting services, search-engine alerts, E-zines or electronic newsletters, filtered news, push services, agents (monitoring a user's activities on the Web), newspapers and commercial SDI services (which save searches to run them continually against incoming documents in a database). Customisable portals can also be categorized as CAS. E-mail-alerting services seem to be the most popular form of CAS in the WWW environment.

14.1.1 Current Awareness Directories

Current awareness directories, such as Free Legal Current Awareness Sources and Legal Alerts and Current Awareness Services, provide annotated lists of services available to the user. Legal500.com can also be classified as a current awareness directory. Its focus is on commercial law developments. It contains information on new legislation, on new developments and on cases in specialist practice areas and is written by the leading lawyers in each jurisdiction (covering over 70 countries). Further features include allowing one to search according to country and to register for monthly updates via e-mail. It also contains a list of recommended law firms and lawyers worldwide, as well as news from law firms (i.e. the latest news direct from law firms).

LawZone is a unique collection of news, features and articles on the latest legal developments. It prides itself on being a gateway to legal information (cases and legislation) on the Internet. It makes use of JustCite, a legal reference tool that indexes content from both free and subscription-protected web services. LawZone Newswires provides subscribers with a weekly, generalist newswire, or with a selection from a range of specialist newswires, thus allowing them to receive updates on the latest relevant news, features and articles relating to areas of practice.

14.1.2 Characteristics of CAS

Current awareness service has certain characteristics. It is not in response to any specific query. This service is provided to update knowledge of researchers in their areas of work and also to keep them abreast of developments in a broader field. It is a continuous service provided to the information seekers irrespective of the stage and progress of their research.

Did u know? Some CAS only provides bibliographical references, while others provide access to full-text documents or websites.

Library and information professionals providing current awareness service should keep the following characteristics in their mind:

- A current awareness service is an announcement mechanism.

● It may be presented in printed, electronic or any appropriate form acceptable to information seeker.

● It is provided.to meet the current information requirement.

● This service is not usually intended to fulfil information requirement of any specific query. It is meant for panoramic view of current developments.

● This service is usually provided in a broader subject area to present a view of specific as well as peripheral subjects.

● Usually CAS is provided to a group of researchers, of homogenous requirements of information, not to individual.

● It is not a tailor-made or customized service.

● CAS has to be provided within a time-frame much before the information is published or appeared in indexing and abstracting sources.

● Getting feedback, from the users about the relevance of information supplied to them, is not a prerequisite in CAS.

● Speed, currency and ease to use are three factors to determine the efficiency and effectiveness of CAS in ally organization.

Current awareness services overcome the time-lag between the publications of items and their subsequent inclusion in comprehensive indexing or abstracting sources. Information professionals have different opinion about this time period.

Some say, it should not be more than one month from the items appeared in primary sources others opine that there should not be ally arbitrary time limit. More precisely, it should be brought out before the notification in secondary sources of information.

Task　　List out current directories list of current awareness.

Self Assessment

State whether the following statements are true or false:

1. Current awareness services assist you with keeping up-to-date with new publications in your subject area.

2. Web Alerts find out when someone has cited an article of interest.

3. A variety of CAS can be found on the WWW.

4. JustCite is a unique collection of news, features and articles on the latest legal developments.

14.2 Advantages and Disadvantages of CAS

An important advantage of using CAS via the Web is that this enables a person to receive customized information that is easy to digest. It also provides immediate access to the end-user work station and the information is highly available. Fourie (1999:382) adds that it is easy to keep track of new developments, of new information resources, of new trends in a specific field, of new research projects, of daily events, of activities in competing markets and of new documents

in databases. CAS can help keep track of forthcoming events and supports research and publications, thus benefiting the individual researcher and the research community and leading to research of a high quality (Kemp, 1979:15). WWW CAS is also speedy and can appear very frequently; in addition; it is very convenient (Fourie, 2003:185). It can be expected that these benefits will also apply to the legal profession. However, empirical studies will be necessary to gain more specific insights. Although those in the legal profession often rely on conferences to keep up to date, they are not always in a position to attend these.

The disadvantages associated with CAS are notably less than the advantages. CAS can, however, be very time-consuming to set up, especially if the Internet is very slow. In addition, users can still be overloaded with information, with the result that they will need to organize the information if they are to benefit fully from it. Customization also does not allow for browsing and the serendipitous discovery of information (Martin and Metcalfe, 2001:270). Another disadvantage is that some services (usually those of high quality) are very expensive. In addition, no CAS can cover all the information on a subject and the user might therefore need to subscribe to different services, leading to overlapping and information overload. Kulthau and Tama (2001:26) also point out that a possible disadvantage of personalised services (including CAS) is that, although useful for routine tasks, they could be less effective in supporting complex tasks involving creativity and the construction of new meaning. (This is one of the aspects requiring further research.)

Self Assessment

Fill in the blanks:

5. …………………… can help keep track of forthcoming events.

6. CAS can be very time-consuming to set up, especially if the …………………… is very slow.

7. …………………… also does not allow for browsing and the serendipitous discovery of information.

8. …………………… CAS is also speedy and can appear very frequently.

14.3 Selective Dissemination of Information (SDI) Service

Selective Dissemination of Information is a service that consists in routing to readers, on a regular basis, news alerts corresponding to their readers' profiles. It is a documentation watch tool. SDI makes it possible to inform readers of new acquisitions on particular subjects or issues. One can equally refer to it as a "documentation profile" or a "personalized profile" or even a "search profile". Selective dissemination of information ("SDI") was originally a phrase related to library and information science. SDI refers to tools and resources used to keep a user informed of new resources on specified topics.

In the Current Awareness Services, users with varying interest are supposed to find out the relevant information depending on their choice and interest. But they have to make some extra effort to be aware of the new information which is also compiled with efforts put by the (information service) provider. Further, the subject areas of interest of modern scientists and engineers no longer conform to conventional concepts of disciplines. Therefore, a need is felt to devise a mechanism in the information system to decide quickly the relevance of each document from the point of view of each user's interest. Later, such a mechanism has been devised and first introduced by H. Peter Luhn in 1958, who named this devise as 'SDI' service.

> *Notes* The earlier concept of 'SDI' by Peter Luhn now has undergone a significant change due to the latest innovation of computer and telecommunication technologies coupling with the present library services.

SDI is a service that can be regarded as a by-product of CAS which not only serves current information but also totally is user-oriented. When CAS is rendered or offered to individual user on his specific demand, it involves in the working of Selective Dissemination of Information System. SDI is an idea to make the current awareness service a user oriented one by offering it at individual level of selected items and is restricted to every user's area of interest.

Figure 14.1: Conversion Process of CAS into SDI
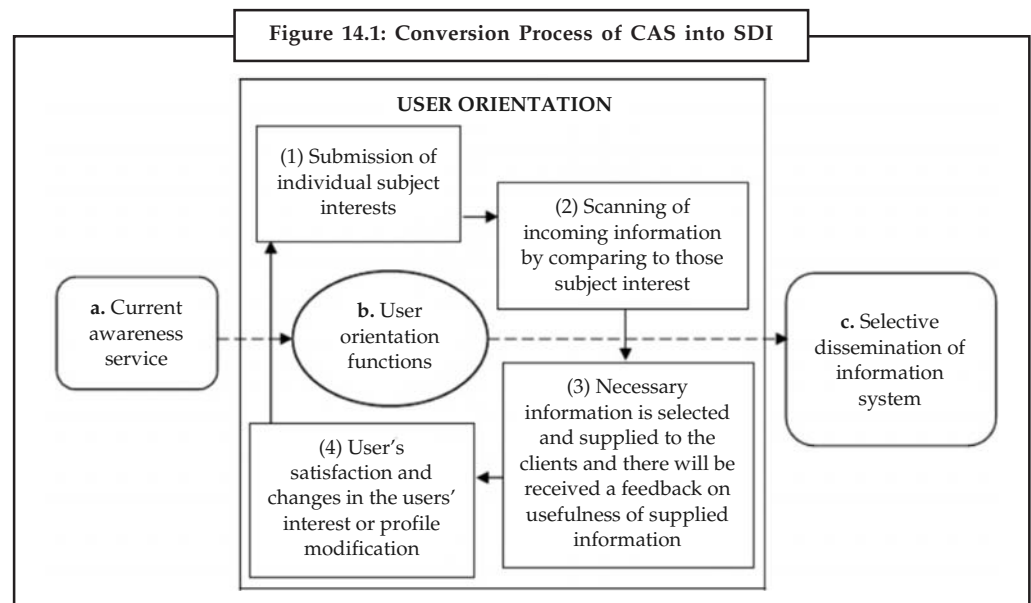
Source: http://www.academia.edu/888349/Selective_Dissemination_of_Information_SDI_service_a_conceptual_paradigm

However, to understand the meaning of SDI service, it is desirable to observe few definitions.

Luhn defines SDI as a service within an organization which concerns itself with the channelling of new item of information, from whatever sources, to those clients within the organization where the probability of usefulness in connection with current work or interest is high. On the other hand, the service endeavours to withhold such information from clients where this probability is low. An attended objective is to present clients from being swamped by indiscriminate distribution of new information and to avert the resulting danger of not communicating at all.

Suseela Kumar defines SDI as the practice in some libraries such as special libraries whose users are small in number to maintain reader profiles which indicate the subjects of interest to them; advanced or elementary level in which they are and the form in which information is required. Whenever information is related to the subjects of a reader's interest received in the library, he is at once informed. UNESCO defines SDI as the regular provision of scientific information to individuals or corporate users on predetermined subjects (interest profiles).

Dr. S. R. Ranganathan defines SDI as documentation list on a specific topic anticipated to engage the attention of the member of the parent body. Fidoten defines SDI as a method of providing personal current awareness information to individuals or groups. However, it can be defined in

a comprehensive sense that, SDI is a type of current awareness service which under optimum conditions involves screening of documents, selecting information exactly tailored to meet the specific research needs of each user or a group of users and supplying the information directly to each individual or group so that user can keep abreast of the latest developments in the area of his specialization.

14.3.1 Traditional Procedures of SDI Service

Every library is not equipped with computer particularly in developing countries. Mechanical operation is also a costly matter. No doubt that there are various limitations in the manual operation of SDI system but it is justified also while planning the SDI services. However, to operate SDI service manually, the following steps are carried in operation:

- *Selection of Projects:* The first stage of planning SDI service is the selection of important projects to be covered by SDI system. Projects should be selected on preferential basis.

- *Project Profile:* Users' interest should be recognized and a project profile should be prepared.

- *Document Profile:* When projects are selected and profile is prepared, documents should be scanned and a document profile will be prepared.

- *Comparing and Matching:* When project profile and document profile are prepared, both the profiles should be compared and matched.

- *Evaluation:* The system should be evaluated periodically.

14.3.2 Conceptual Workflow of Traditional SDI Service

The sequence of functioning or workflow including the main activities in manual SDI service is explained in Figure 14.2. The workflow shows that the execution of manual SDI service involves some sequential operations which are explained below:

Step 1: Starting Point

- Receiving the new arrivals/documents.

- Receiving user profile.

Step 2: Scanning the Document

- Specifying and recording bibliographical description of the new items.

- Scanning the new documents in terms of subject matter and setting up appropriate subject headings and feasible number of keywords with appropriate page references.

- Scanning new and old items in terms of user's interest and preparing index file for those items by selecting significant key terms relevant to users' subject interest.

Step 3: Analysis of the User's Need

- Careful study of user profile.

- Asking user through an unstructured interview regarding his need.

- Preparing a search profile by selecting appropriate possible terms for searching information relevant to concerned need.

Figure 14.2: Sequence of Functioning or Workflow of SDI Service
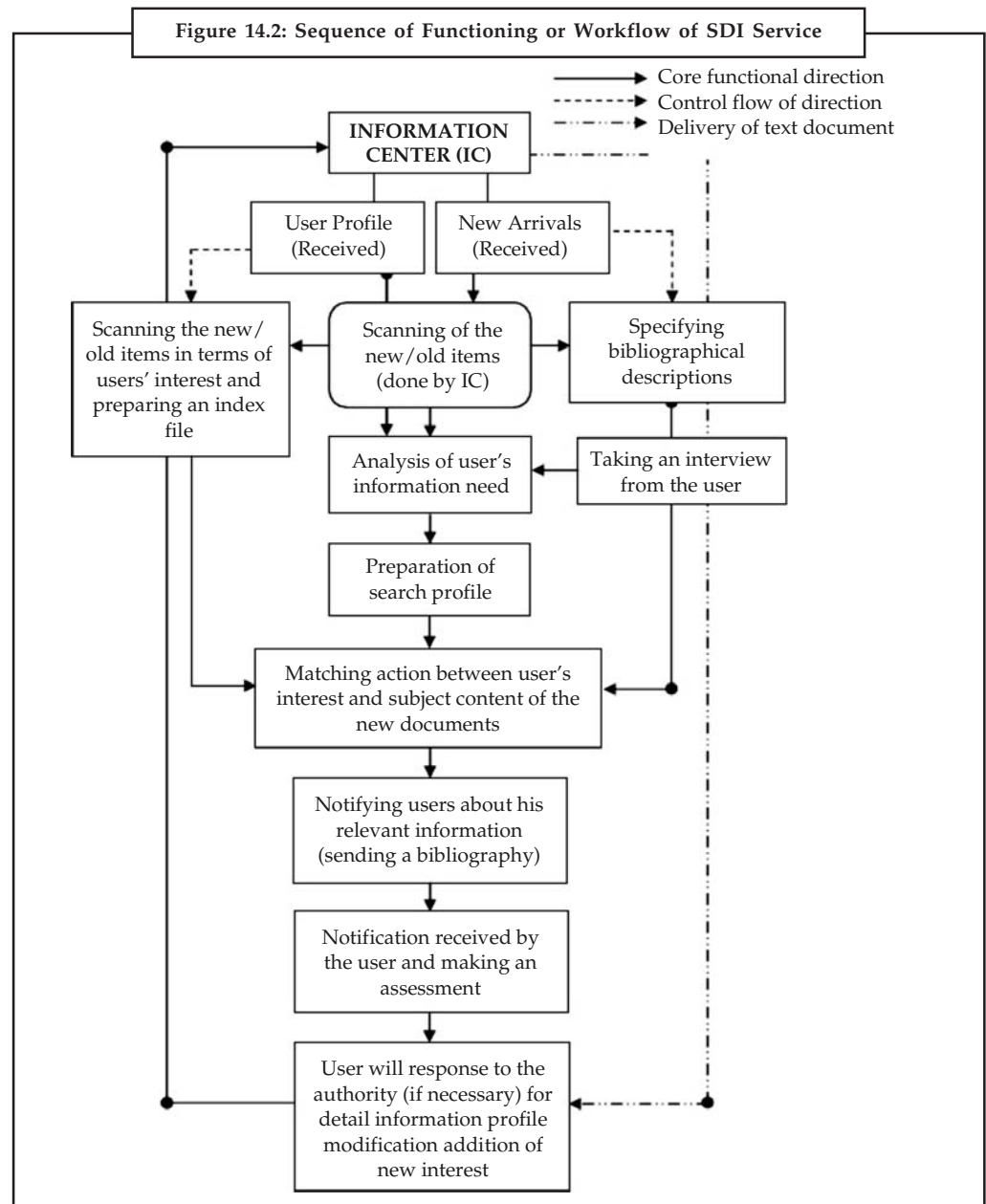
Step 4: Information Matching Action

- Study of the search profile.

- Study of the document index file.

- Study of the bibliographic description of the concerned documents.

Step 5: Notification to User

- Sending a bibliographical list of publications relevant to user's need.

- Assessing preliminary notification received by concerned user.

Step 6: User's Response to Information Centre (IC)

- User may request for text information of specified items in detail after assessing the notified items.

- User may request for profile modification or change, if he doesn't satisfy with the notified items.

- User may request for additional new interest, if he wants more information than the notified items.

Finally, the information centre will try to modify or attach user's additional need and thus the operation is going on as before.

Self Assessment

State whether the following statements are true or false:

9. Selective Dissemination of Information is a documentation watch tool.

10. In the Current Awareness Services, users with similar interest are supposed to find out the relevant information depending on their choice and interest.

11. Mechanical operation is a costly matter.

12. Projects should not be selected on preferential basis.

14.4 Online Procedures of SDI Service

SDI is a current awareness mechanism through which the individual information user can expect to receive regular notification of new literature and data in accordance with his/her statement of interest or profile. But this task is very difficult to perform due to accelerated growth of information publications in every moment. A computerized information system opens a number of possibilities with respect to current awareness services. One of the most significant innovations was the SDI program. SDI is a service of providing textual information which involves graphics, charts or images, etc. in addition to text.

The primary intention of a researcher in getting SDI service is to find out the specific relevant items of information. For this, they require an exact matching mechanism. However, in text database system there is generally no option for exact matching of information due to increased chance of words co-occurring in a document without really being related to each other, instead approximate matching is available in this type of database. So it is quite a problem for the researchers of science, social science and humanities to manage exact information from a volume of information in a text database that causes hindrance in their research work. Therefore, a system should be developed, so that the researchers can find out their interested information exactly and pin-pointedly. This is possible by introducing an exact matching technique with text database systems. An information filtering technique can effectively solve this problem and prevent information overload.

P. S. Kawatra proposed the following guidelines for preparing online SDI service in his book "Textbook of Information Science".

- Acquiring user's profile and storing them.

- Processing incoming materials.

- Matching users' and document profiles.

- Handling of cards.

P. S. Kawatra also proposed some guidelines for preparing modified online SDI service in his book, which are as follows:

● Users' demographic profiles, professions and subject interests are surveyed.

● New and earlier materials are reviewed.

● Relevant publications are matched with subject interests of users.

● Selected materials are processed by abstracting, extracting, reviewing and analysing or compiling.

● Packets of materials in different forms are sent to users.

● Users are asked to fill out feedback questionnaires in order to find out usefulness of packages and update user's profile.

Self Assessment

Fill in the blanks:

13. …………………… is a current awareness mechanism through which the individual information user can expect to receive regular notification of new literature and data.

14. A …………………… should be developed so that the researchers can find out their interested information exactly and pin-pointedly.

15. …………………… are asked to fill out feedback questionnaires in order to find out usefulness of packages and update user's profile.

16. Selected …………………… are processed by abstracting, extracting, reviewing and analysing or compiling.

Case Study

Impact of Effective Current Awareness Management with Journal TOCs in VSSC Library

The Library of the Vikram Sarabhai Space Centre (VSSC), a hub for development of satellite launch vehicles and associated technologies of the Government of India, has presented a case study discussing the benefits of using Journal TOCs to manage the delivery of a current awareness service (CAS) for their researchers.

The presentation, entitled "Linking Users and Online Journals in TOCosphere: JournalTOCs in VSSC Library" was given in CALIBER 2013, one of the largest and most important gatherings of academic and research librarians in the Asian subcontinent, that is organised every two years in India.

VSSC is the largest aerospace research centre in India, undertaking intensive research and development activity in technology domains like aeronautics, avionics, composites, etc. with a view to achieve self-reliance in the high tech realm of launch vehicle technology. Since VSSC subscribed to JournalTOCS Premium a few months ago, currently over 380 researchers from VSSC are following 700 different journals.

The driving force behind the implementation of JournalTOCs Premium in VSSC is Narat Narayanankutty, the Head of Periodicals at the VSSC Library. He not only thoroughly

Contd...

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tested his customisation and reported errors and things that needed attention but he also prompted further developments and enhancements of the technology of JournalTOCs. Among the features added to JournalTOCs Premium thanks to Narayanankutty is the web interface for super-user accounts to manage the email alerts, the saved searches and followed journals on behalf of patrons.

This case study shows that when working closely, both the service provider and its end-user can mutually enrich and greatly benefit from each other thanks to the synergy created between them.
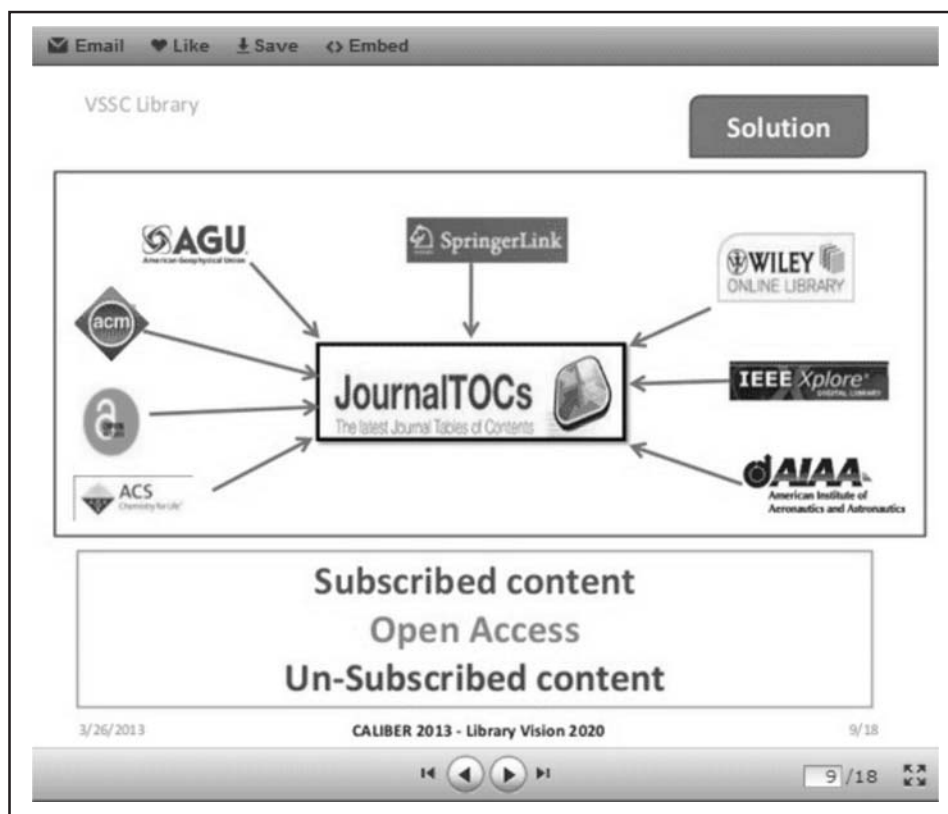
There are more interesting suggestions made by Narayanankutty that are being implemented in JournalTOCs and will be gradually:

1.   A service highly rated by VSSC users

2.   Direct benefit for the e-Resources librarian

3.   Useful as a light weight discovery service

4.   Useful for all types of libraries to adopt and promote

5.   Easy to implement

Questions

1.   Write down the case facts.

2.   What do you infer from it?

Source: http://www.journaltocs.ac.uk/API/blog/?p=1023

14.5 Summary

- Current awareness service has been defined by a number of library and information science professionals but none seems to be universally accepted.

- Current awareness services assist you with keeping up-to-date with new publications in your subject area.

- Current awareness directories, such as Free Legal Current Awareness Sources and Legal Alerts and Current Awareness Services, provide annotated lists of services available to the user.

- Current awareness services overcome the time-lag between the publications of items and their subsequent inclusion in comprehensive indexing or abstracting sources.

- An important advantage of using CAS via the Web is that this enables a person to receive customized information that is easy to digest.

- Selective Dissemination of Information is a service that consists in routing to readers, on a regular basis, news alerts corresponding to their readers' profiles. It is a documentation watch tool.

- SDI is a service that can be regarded as a by-product of CAS which not only serves current information but also totally is user-oriented.

- SDI is a current awareness mechanism through which the individual information user can expect to receive regular notification of new literature and data in accordance with his/her statement of interest or profile.

- One of the most significant innovations was the SDI program.

- A system should be developed, so that the researchers can find out their interested information exactly and pin-pointedly.

14.6 Keywords

Bulletin Board: A bulletin board is a surface intended for the posting of public messages.

Citation: A citation is a reference to a published or unpublished source not always the original source.

Conferences: A conference is generally understood as a meeting of several people to discuss a particular topic.

Current Awareness Service: It is a system or publication for reviewing newly available documents, selecting items relevant to the needs of an individual or group, and recording them so that notifications may be sent to those individuals or groups to whose needs they are related.

Customization: Production of personalized or custom-tailored goods or services to meet consumers' diverse and changing needs at near mass production prices.

Documentation: Material that provides official information or evidence or that serves as a record.

E-zines: An ezine (also spelled e-zine) is a more specialized term appropriately used for small magazines and newsletters distributed by any electronic method.

Selective Dissemination of Information: Selective Dissemination of Information is a service that consists in routing to readers, on a regular basis, news alerts corresponding to their readers' profiles.

14.7 Review Questions

1. Define Current awareness service.

2. Highlight different kinds of CAS.

3. Discuss Current Awareness directories.

4. Explain the characteristics of CAS.

5. Describe the advantage and disadvantages of CAS.

6. What do you understand by Selective Dissemination of Information service?

7. Explain with the help of diagram the conversion process of CAS into SDI.

8. Discuss the steps of conceptual workflow of traditional SDI service.

9. Write brief note on the online procedures of SDI service.

Answers: Self Assessment

1.	True	2.	False
3.	True	4.	False
5.	CAS	6.	Internet
7.	Customization	8.	WWW
9.	True	10.	False
11.	True	12.	False
13.	SDI	14.	System
15.	Users	16.	Materials

14.8 Further Readings

Books

Aswal, Rajinder Singh (2006). *"Library Automation for 21st Century."* Ess Ess Publication.

Brown-Syed, Christopher (2011). *"Parents of Invention: The Development of Library Automation Systems in the Late 20th Century: The Development of Library Automation Systems in the Late 20th Century."* ABC-CLIO.

Kochtanek, Thomas R. and Matthews, Joseph R. (2002). *"Library Information Systems: From Library Automation to Distributed Information Access Solutions."* Libraries Unlimited.

Lancaster, F. Wilfrid (2008). *"Problems and Failures in Library Automation - Volume 15th."* Read Books.

Nanda, Manohar (2006). *"Library Automation."* Anmol Publications Pvt. Limited.

Notes

Online links

http://www.bodleian.ox.ac.uk/law/finding/e-resources/current-awareness-services-draft

http://www.galter.northwestern.edu/Guides-and-Tutorials/Current-Awareness

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2605019/

http://www.networks.nhs.uk/nhs-networks/nwas-library-and-information-service/current-awareness

http://www-public.jcu.edu.au/libcomp/library/academic/research/JCUPRD_026163