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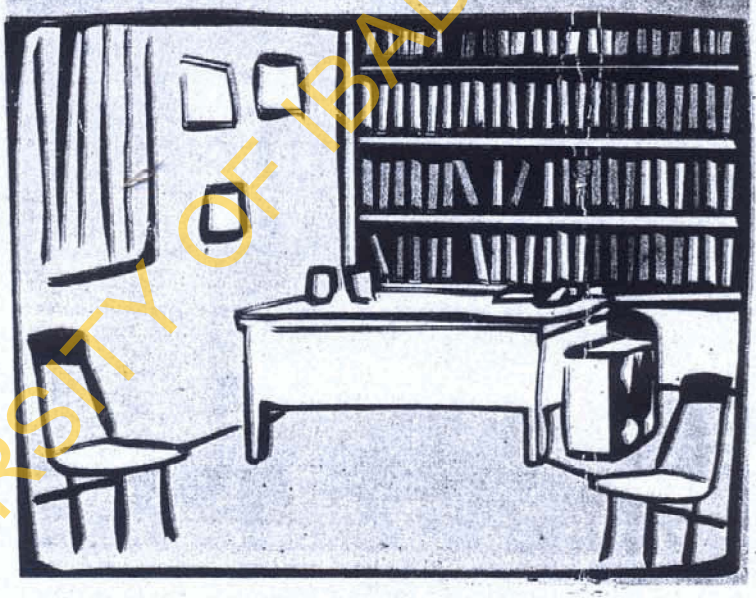
INTRODUCTION TO USE OF LIBRARY

FOR STUDENTS IN TERTIARY INSTITUTIONS



BY

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PREFACE

Generally speaking, User Education Programme in Academic setting like ours is a useful approach to guide all users of the Library the way to use Library resources. Prior to now, the Authors noticed the non-charlant attitudes of our users to the use of Library materials and felt concerned that something must be done immediately to arrest the situation. This led to the drawing of a curriculum on the use of Library, which was later approved by the Senate. For the first time in the history of this University, the teaching of the course 'termed' Library 101 (Use of Library) started in 1999 by the Library Professional Staff.

The contents are divided into five main chapters covering, Membership Registration, Rules and Regulations, Reference materials, Accession numbers, Guides to Information, Library Automation, Classification/cataloguing. All these topics give significant correlation to one another, though written independently.

The textbook is not a complete textbook on its own but should be used as reference when the need arises by students of Tertiary institution.

I sincerely appreciate the efforts of my colleagues who contributed in no small measure during the preparation of this textbook. Special thanks are extended to the University Librarian's Secretrary and her staff who typeset the manuscript. God bless you all.

Gboyega Adio (Mr.)
July 2002

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CHAPTER ONE

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1.1 INTRODUCTION

The simple definition of User education is the instruction given to readers to help them make the best use of a library. The main purpose of the instruction is to stimulate the use of the library and its information resources. Fjallbrant (1978) defines the concept thus: "... the teaching of those skills that will enable students to locate and use materials effectively, and feel confident in using the library. Also, its aim is to acquaint users with the use of the materials in the libraries.

The history of development of user education is not a recent one. It has been traced to 1960's, particularly the use of academic libraries. Subsequently the period between 1966-1990 witnessed tremendous changes in user education in libraries, particularly those involving instruction for new students and undergraduates. Attempts to explain why user education was neeessary were based mainly on the belief that to know how to use a library was an essential part of the education for life process, to prepare the student for the continuing process of self-education once the formal process had been completed. The need for user education in libraries stem from the fact that a larger number of users (undergraduate) do not know what abstracts journals are; some do not know whether the library has author catalogue or not.

It must be pointed out that the implicit assumption that the learner is capable of finding material relevant to his needs is not valid; the learner requires to be taught that capability. This is the only way to prepare users to take full and active part in such learning methods. Another reason

for instruction is the growth in the number of interdisciplinary courses. There may be problems with users in location and organisation of materials for study.

Also, the librarians must not hoard our bibliographic knowledge and conceal the awareness of the problems of information retrieval. We have to insist upon making available to all users, in every conceivable form and at every accessible point of need. This is when we can be complete Librarians.

Users cannot be taught the use of the library in isolation, but must see it as a continuous process of education in which the varied facets of communication are intermixed. Every contact with the library, formal or informal, involving contact with library staff , will have an education value. User education in library terms should therefore be aimed at maximising that value.

1.2 THE GENERAL GOALS OF UNIVERSITY LIBRARIES:

There are goals and objectives for user education in any type of library. Fjallbrant and Stevenson (1978) described the goals and objectives of user education in academic libraries as follows;

"The goals and objectives for programmes of University library User education must be in agreement with the general aim of the library the aims which must in turn, be related to the goals and aims of Higher education."

Among the general goals of University Libraries are:

1. To contribute to the realisation of the aims of the University with regard to teaching, learning and research, by acquisition of material (both print and non-print) necessary to cover present day and future information needs;
2. To organise the material acquisition in such a way that it not only permits but actively stimulates the use of the materials;

3. To adapt these information resources and services to the ever-changing needs of University, and the society;
4. To contribute to the integration of both National and International information resources within the University;
One way of stimulating the active use of information stored in the library is by teaching the library user how to obtain information from the material available. Thus the general goal for a programme of user education for any type of library, is likely to introduce an attempt to create an awareness of the resources available.

As students are increasingly expected to use a huge variety of information resources to support their learning, and to be independent learners, they need to develop their skills in searching for, and exploiting information. A significant improvement has been made in end – user access to information in the higher education community.

History has shown that University libraries continue to have strong commitment to undergraduate user education. Subject librarians have often been put in charge of user education in their subject areas. The user education is organised to give instruction and the necessary skills to exploit a range of reference tools, including dictionaries, handbooks, encyclopaedias, chemical abstract and the science citation index. Also, there are series of formal lectures planned and delivered by subject librarians.

Another method of user instruction in academic libraries involves the provision of booklets to students, which give information on sources for their area of study, and asking them to carry out several exercises. These exercises were subject – based and were integrated into the curriculum. The assignments usually test students' skills in searching for data, locating and verifying references to the subject literature, and their ability to use up-to-date information to

produce a short essay on a chosen topic in one's field. These methods have been used extensively in Universities in developed countries. However, some university libraries have applied such similar methods in their user education programme.

It should be noted that the development being discussed here encourages the use of subject specialist in user education programme in academic libraries. Even subject librarians organise workshops to offer their expertise and support. However, as far as possible the students are advised to explore the services. The aim of the workshop session is for the students to learn for themselves rather than for library staff to carry out the searching on database on their behalf . This method is used specifically in the teaching of how to handle searches on electronic medium. The students are also encouraged to draw upon and share with the other group members their own ideas and experiences.

The students use the database to search for materials on their different topics. In order to ensure that the students are able to find suitable material, subject team members research the topic before hand. The subject librarian agrees the list of topics with the academic tutors, who are invited to contact the subject librarian or other subject team members to discuss their respective search topics. Also, hands – on desk sessions are organised for groups. Students work individually, or in pairs or small groups. These are new developments, which have not been fully applied or used in Nigerian University Libraries.

1.3 AREA OF COVERAGE FOR USERS OF THE LIBRARIES

1. The lecture

Traditional library instruction has made considerable use of the lecture method for large groups. It is one of the traditional forms of teaching in higher education – used for teaching large groups of students, and make use of both auditory and visual sensory inputs (i.e. the blackboard). The disadvantage has to do with the speed of delivery of information, which cannot be controlled by the receiver. Also, students play a fairly passive role. This method of communication in higher education has received severe criticism. However, lectures give opportunities for personal contacts between students and lecturers.

With regard to orientation in library use, it has been argued that lectures commonly given to fresh students at the beginning of their first session, must surely be a waste of time, as such students are just struggling to adjust to university life. Suitability of lectures for a course in information retrieval has been questioned. However, this method seems to be the best of introducing users to the library.

2. Seminars, tutorials and demonstrations

These are ideal for smaller groups of students. The atmosphere becomes formal and there is greater opportunity for interaction both between staff and students and between the student themselves. It is possible to provide motivation, and to see that students are actively involved. Demonstration are possible, and might prove to be a good way of teaching small groups of about five or six students the use of various tool, used for information retrieval. This approach can give students the opportunity of actively searching for information about some topic of interest.

3. The guided tour

This also, is a traditional approach to library orientation, in which students are given a short tour of the library, during their first week as University students. This type of orientation is often given when students have little or no motivation actually to use the library. Here students take little active part, in the teaching/learning process, but tend to follow passively round the various location or stations.

4. Audio-visual methods

Materials such as films, video tape/slide have received some attention in libraries. These materials have been suitable in library education, however, a few new technologies are now available and more suitable for teaching library use. The new media that have taken over in suitability include videos, multimedia.

5. Multimedia

This is the combination of video, sound, text, animation and graphics with a computer to tie these components. This is suitable for both individual and group; and can be used in teaching/learning, particularly in the orientation of users, and then use of reference sources. The common equipment used together for multimedia includes:- CD-ROM, TV, Video cameras and printers. The benefits for users/students are that it is an exciting element, since multimedia can reach all the senses, which will help those with varying learning styles.

6. Printed Guide

This can be inform of book, compendia, or guide as this has an advantage of being available for use, and when required. Individual student can work at their own speed,

and reputation is possible, and visual display in the form of diagrams is easy to achieve.

Many libraries provide printed guides on the use of the library as part of their orientation programme. The guide should be written with users in mind, avoiding the use of too much professional jargon. It is to be distributed, the timing is important – it has to be planned (given out during orientation).

7. Self – guiding material

This can be achieved by the use of clear and attractive signs (as permanent visual display). Signs can also be used to indicate how to fill in a loan request form at a closed-access library, and for indicating how to get from one area to another. Also, don't touch, leave consulted books on the table etc. are signs used in Libraries.

8. Individual instruction at the reference desk

Personalised service at the reference desk, when the student asks a question about the use of some part of the library when he is motivated to learn, is a form of library instruction. The timing of user education is very important. It is important to provide instruction at a point when the user experiences motivation for learning about the material. Whatever method chosen or applied for library user education should involve the active participation of the student, at a point where the users feel motivated to use the library, for example in connection with his/her studies.

However, there is difficulty about this type of individual help, it may provide immediate relief but not necessarily the understanding to cope with the same similar situations in the future. Overall, at most libraries student numbers have increased but there has been no corresponding

increase in the number of libraries. As a result, the time to provide adequate explanations as to how to use the library is not there. At this point, individual help at the reference desk will be an advantage.

1.4 USER EDUCATION IN AUTOMATED LIBRARY SYSTEM

In automated library system, it is necessary to educate users on how to use information Technology (IT) to exploit the resources of the library. It is a common knowledge that one major force shaping the future include technological trends. These trends develop and advance at a rapid pace and always seem to have some impact be it large, medium-sized or small libraries.

Also, it is a common knowledge that a larger number if not all users do not know how to make use of computers or computerized library catalogue, for this reason; there is need for end-user training. The history of encouraging users to utilize computers to search for information has infact been remarkable. User education should be planned to enable students to acquire the ability to use the computer as a source of information resources. In automated environment librarians are not to act as search intermediaries, because for example, the CD-ROM is user friendly. The systems are designed to be end-user systems, which encourages independence and browsing. Unless suggested by a patron, librarians may not conduct searches for users.

IT Training for Users – how and when?

In giving training to users, individualized "point-of-use" rather than group instruction is suggested (Allen, 1990). The timing of the training is equally important. Instruction or training should be provided at a point when the user experiences motivation for learning about the material.

Training is best done with the active participation of the student, particularly at a point where users feel motivated to use the CD-ROM or OPAC in connection with his/her studies; when there is an urgent need for information in connection with a particular project, assignment or research.

1.5 WHAT USERS NEED TO KNOW?

In automated library environment, there will be an obvious transition from the use of conventional bibliographic information retrieval to the computer - the OPAC. The issue of what users are expected to know during the training deserves some attention. OPAC differs significantly from the conventional bibliographic information retrieval systems in a number of ways; and users should be prepared to learn some command language. Lambert (1994) has suggested that the interaction will be meaningful if users have:

- Competency in the use of computers,
- Knowledge of catalogues and cataloguing
- Knowledge of information retrieval and
- Knowledge in the subject in which they are seeking Information.

Also, users should have such training that will enable them search competently and use for example TINLIB software from Main OPAC menu and search by author, title, subject, keyword search and combination search (Boolean logic). Online searchers need training, regardless of which method is used, in order to ensure that users exploit the available information effectively, and efficiently thereby maximising the benefits of the OPAC.

To effectively use the CD-ROM, the following constitute what users should know:

- basic search commands such as find or print,
- some idea of Boolean logic;
- the difference between the use of descriptors or free-

text keywords;

- how to limit a search by year, and
- a knowledge of CD-ROM technology.

1.6 DEFINITION OF LIBRARY:

Library according to the New Encyclopaedia Britannica, is a collection of written, printed, graphic or visual materials (including film, photograph, tapes video, microfilm and computer diskette) organized and maintained for reading, study and consultation.

It can also be defined as a storehouse of information where information is acquired, preserved, stored and disseminated upon request. In order to expose students/ users to some rules and regulations in libraries, LAUTECH Library shall be used as a case study. However, some other Libraries may have additional or different6 rules from LAUTECH Library.

1.7 LAUTECH LIBRARY

The LAUTECH Library came into existence in July 1990 and since then, staff and students of the University have been using its resources. There are several rules and regulations guiding the Library to provide maximum use for both staff and students.

Some of the Rules are:

1.8 MEMBERSHIP

(1) Every member of the University (students/staff) is a potentials member of the Library and may use it for lending and references after registration.

(2) Every member of the University is expected to register

with the Library to make effective use of it.

(3) Students must be in possession of a student's Library identity card, which must b e produced for inspection upon request by Library staff.

(4) Member of staff from other Institutions, Commercial, Industrial houses may use the resources in the Library for information purposes after producing proper letter of identification/introduction.

(5) Students of other Institutions may be allowed to use the Library if a letter of introduction from that Institution's Library or Department is produced upon request.

1.9 REGISTRATION:

(1) All registered students and staff of the University may register to use the Library.

(2) No Student may be registered for borrowing book until he produced a general clearance from the University.

) Each student must complete and sign the Library Registration forms.

) 2-borrower tickets are usually issued to students to borrow books.

(5) A lost ticket may be replaced after 21 days with fine on the approval of Head Reader's Services.

1.10 RULES/REGULATIONS AND DISCIPLINES

In order to protect the materials and users of the library, so that users can have maximum satisfaction with library materials, some rules and regulations were put in place. Some of the rules are:

(1) Silence must be maintained in all parts of the Library.

(2) There should be no smoking of Cigarette in and around the Library.

(3) Eating or drinking of any kind of food is not allowed in

the Library because crumbs of such food attract insects, rodents that are very destructive to books.

(4) Reservation of seat, especially during the time of exam is not acceptable in the Library.

(5) Raincoat, Umbrella, Laboratory coat, Bags, Hand folio, Rain cap are not allowed in the Library, but may be put in the rack near the entrance at the owner's risk.

(6) All books and papers must be shown to the Library Porter when leaving the Library.

(7) Students and other users are not allowed to enter the Library prior to official opening hours and must leave the Library at the stipulated closing time.

DISCIPLINES

(8) Theft, Mutilation, and defacing of Library books will attract automatic expulsion, from the Library.

(9) Any book found with Student in the Library with stamp of other Library or Institution on it will be seized.

(10) Lost or damaged book must be paid for, and administrative cost will be added to the cost of the damaged book.

(11) A fine of N5.00 is chargeable for each day a book is kept overdue. Further disciplinary action may be taken against a person who failed to renew or return a book.

1.11 OTHER RULES GUIDING THE USE OF LIBRARY

(1) On leaving the University, Reader's tickets must be surrendered to the
Library authority, and clearance will not be made until the tickets are returned.

(2) Final year students are requested to return all Library books on loan to them immediately after the final examination.

(3) A user cannot borrow books on Reserve.
(4) Inter-library loan services can be rendered by the Library for a user.

References

1) Adeoti-Adekeye, W.B. (1997) The need for User education school libraries. Library Review vol.46 no.3 pp 586 – 592.
2) Fjallbrant, N. and Stevenson, M. (1978) User Education in Libraries London: Clive Bingley.
3) Harring, J.E. (1978) User Education in Schools The School Librarian Vol.28, No.4 pp.341-342.
4) Wali, M.H (978) The role of School Libraries. Nigeria School Library Journal; Vol.1, No.1, p.35

CHAPTER TWO

2.0 THE LIBRARY

2.1 INTRODUCTION

Library as defined by the New Encyclopedia Britannica is the collection of written, printed, graphic or visual material (such as films, photographs, tape, records, computer programmes, video discs, compact discs etc), organized and maintained for reading, study and consultation.

In addition to the definition of Library in chapter one the Library can also be said to be the independent learner's powerhouse of books and non-book materials. Through all the centuries of existence, the Library has had three main functions:-

a) To collect
b) To preserve
c) To make available.

The reader entering an adequate Library can pursue to its depth a study of his choice. He can translate himself to whatever time and place. He becomes not a servant of a given view, but a master over an empire of knowledge. With preservation, book endures, as most work of man does not. They speak from one generation to another and provide the union of understanding that links the generation, and cast our vision of life forward into a future we shall not see. As a student therefore, you must have acquaintance with the Library so that you can locate the book you want to read in your University Library.

2.2 PURPOSE OF A LIBRARY

The purpose of a Library is to support the educational work of an institution. This purpose is achieved in two ways: by providing users with the means of finding whatever information they need; and by encouraging them in the habit of using books both for information and for pleasure.

If the Library is to serve its purpose, it must be recognised as an essential part of the school's work while the teaching programme of the institution needs to be planned so that the Library plays a central role.

Students need information to help them with the subjects they learn in school. The textbook they use, and the notes they take in class can be an excellent foundation. They may also be sufficient for revision purposes, but they are not enough to enable students to write good essays of their own or to carry out group projects. Other sources such as the Library is required to help them with their school studies and personal development.

2.3 THE BOOK

As a student/user of the Library, it is important that you know the parts of a typical book.

A book is divided into three major parts. The dust jacket and the covers enclose these parts.

a) The preliminary pages
b) The main book
c) The subsidiary pages.

The dust jacket:

It protects the book from dust. On the part of the jacket that bends inside the covers, you will find notes about the book and the author.

The cover:

On the cover, you will see the name of the author and the title statement both on the spine. (i.e the central edge of the book).

The Preliminary pages:

These include all the pages before the main book such as:

i) The half – title page:- this contains only the brief title of the book.

ii) Title page:- this is the page you should turn to for full bibliographical information of the book. The following information is what you should except on a title page.

- The full title of the book
- The author's name. If there is no author, there should be a translator/editor/compiler.
- The imprint i.e place of publication, publisher, year of publication which usually corresponds to the copyright year.

(iii) The copyright page – This is the back page of the title page. It is fuller than all the other pages. Note that copyright means the reserved right to reproduce and sell the book for a period of time that varies from one country to another.

(iv) Dedication:- This is a brief statement in which the author pays respect to those dear to him.

(v) Preface/Acknowledgement:- The preface is normally written by the author. He gives information as regards his purpose for writing the book, his method of developing the book, the class of readers to whom the book is written and lastly, he acknowledges help given to him by people he came in contact with during the course of writing his book.

(vi) Forward:- The forward is written by one that is knowledgeable in the field the author has written. He writes to introduce both the book and the author.

(vii) Contents:- This contains a list of chapter headings and subheadings contained within the main book, the

headings of the preliminary and subsidiary sections and the pages where they could be found.

(viii) Introduction:- Introduction follows the contents page. It is a general background information to the subject of the book. It is always good to read the introduction before reading the main book.

The main book:

This is the main body of the book. It contains:-

- Illustrations
- Footnotes at the bottom of each page (note that this is optional)
- Marginal notes (annotations by the margins of the pages of the book)

The Subsidiary pages:-

This main include:

- Notes i.e a list of references made while writing
- Bibliography:- List of published materials cited in the book. It is usually arranged in alphabetical order by the author's surname.
- Appendix: This contains some statistical data not included in the main book.
- Glossary: This is an alphabetical list of uncommon terms used in the book. The terms are not only listed, they are also defined.
- Index: An alphabetical list of names, subjects, references etc at the end of a book with page numbers of the place where they could be found. It is the easiest guide to what the book contains.

2.4 REFERENCE MATERIALS/BOOKS

Some Library materials are only for reference. Such materials are not read like textbooks, rather they are consulted only when one wants same particular information.

Reference materials are kept under the reference services unit/section of the Library. They aid users in their pursuit for quick, ready made and factual information needs.

Examples of reference materials are:-

(1) Dictionary
(2) Encyclopaedia
(3) Maps and Atlases
(4) Handbook and Manual
(5) Bibliographies
(6) Periodicals
(7) Government and official publications
(8) Year book and Almanac
(9) Directories
(10) Concordance

2.5 RESERVED BOOKS

Books in constant demand by users are removed from the open shelf and placed on the Reserve Section of the Library. The purpose is to ensure that all concerned have an equal chance to read them. Accordingly, they may be retained by the user for about two hours at a time and may not be removed or borrowed out of the Library.

It is important to note that users sometimes return some books placed in the Reserve Section to the open shelf in the reading rooms when they are no longer in constant demand. When returned, users can now borrow such books out of the Library.

2.6 PROCESSING OF LIBRARY MATERIALS

Materials acquired by the Library have to be organized in order to make them accessible to readers and also to help the Library to know its holdings or collections or stock (in volumes) at a particular point in time. The number given to new books on arrival into the Library is known as accession numbers.

The accession number will always identify a particular item in the Library. If, for example you want to distinguish between two copies of the same book, look at the accession numbers. Accession numbers will also be put to use when books are being borrowed or returned.

2.7 LOANING OF BOOK

The circulation unit of the Library is the first point of contact with the user and it is also responsible for lending/ charging/Discharging of textbooks to users. Users are advised to always make enquiries from staff at the circulation desk.

Readers are allowed to pick books from the open shelves in the reading rooms. Such a book is then taken to the circulation desk to be processed and recorded accordingly by the staff on duty. Processing is important so as to enable the Librarian/Staff to know who loan an item out of the Library, how long it has been out, and what other items the borrower has on loan.

2.8 REQUEST FOR BOOKS

Sometimes, users will want to borrow books that are already on loan. Possibly they will need a book so urgently that it will have to be traced immediately. In nearly all cases the person who need the book can wait until it is returned to the Library in the normal way. A system by which the book

is not put on the shelf but is set-aside for the person who asked for it is always in place.

2.9 DISPLAYS/EXHIBITION OF NEW BOOKS

The wider use of the Library is also encouraged by the use of displays/exhibitions. They are a good way of drawing attention to sections of the Library's stock, to new books, or to new groupings of material from a variety of subjects. They also serve as a good way in linking the Library to what is going in the institution.

References

1. Chukwuma, Helen and Otagburuagu, Emeka. (eds.) (1977) English for academic purposes. Onitsha: Africana-FEP Publishers Ltd.,pp. 14 – 16.
2. The New Encyclopaedia Britannica (1990) Vol.22 Chicago: Encyclopaedia Britannica, Inc. pp. 968 – 984.
3. Ray, Colin. (1990), Running a School Library: a handbook for Teacher – Librarians. London: Macmillan Education Ltd. Pp. 1 – 100

CHAPTER THREE

3.0 GUIDES TO INFORMATION

3.1 INTRODUCTION

Information is paramount to the success of any organisation, be it social, religious, economic or political. Information should be timely and cost-effective.

There is a need to guide the users of library to ensure that information needed is attained with little or no serious difficulty. Guidance to library users may be in form of reference service, direction to library facilities or resources. There are two different categories of books: those that can be read through for information, education or inspiration, and those that can be consulted or referred to for definite piece of information. The latter is referred to as reference book.

The term Reference Service entails giving assistance to library users to make adequate use of library resources (collections) purposely to satisfy their information needs.

Reference service is grouped into two major areas; Current Awareness Service (selective dissemination of information) and Retrospective searching (information retrieval).

Reference books are regarded as such publication written for the purpose of information consultation only. They give a rather introductory fact about the topic, subject or area being consulted; they are not reading for digest i.e. there is no serious reading from cover to cover.

Two types of reference books are identified:

(i) those materials that contain the required information especially encyclopaedias dictionaries, handbooks, directory etc.

(ii) those materials that lead one to the location of a particular information, for instance abstracts, indexes, bibliographies etc. Encyclopaedia, Dictionaries, Manuals,

Handbooks, Directories, Bibliographies, Abstracts and Indexes etc. are good example of reference books in any library.

3.2 CHARACTERISTICS OF REFERENCE MATERIALS.

Reference materials are not usually borrowed out of the Library because they are more costly, limited in number and being highly demanded for. Reference materials are located in a separate section of the library and they are meant for consultation of specific information. They are consulted from time to time.

Different kinds of Reference Materials.

1. Dictionaries
2. Encyclopaedia
3. Bibliography
4. Yearbooks
5. Directories
6. Handbooks/manuals
7. Geographic sources

3.3 DICTIONARIES

Dictionary came into existence in about 13th century. It is generally referred to as a wordbook: It generally deals with collection of words in which each word is treated to its pronunciation, derivation, usage, meaning, spelling and syllabication.

Dictionary may have so many usages and can perform varied functions such as giving synonyms, antonyms, quotations, illustration, maps, geographical information, biographical information on individuals e.t.c

A dictionary according to the Oxford English Dictionary (1989) is a collection of words in which each word is treated

as to its pronunciation, derivation, meaning, syllabication, usage, spelling etc

It may give antonyms, synonyms, illustrations, quotations, and biographical facts, historical and geographical information.

For convenient reference purpose, dictionaries are arranged alphabetically. It is usually defined as the alphabetical listing or arrangement of words or topics.

The basic difference between a dictionary and an Encyclopaedia is that a dictionary defines words while an Encyclopaedia gives general information about topics.

A modern large dictionary is called unabridged dictionary. It is encyclopaedic in nature by providing information about a particular word. It usually combines the features of two types of reference books, which are a dictionary and an encyclopaedia.

There are three main types of dictionaries

1. General dictionaries – usually unabridged and desk dictionaries. They provide overall information such as pronunciation, meaning, derivation etc. about the words of a language.
2. Subjects' dictionaries. They deal with specific subject area.
3. Supplementary language books or wordbooks. They are equally known as specific/special purpose dictionaries. They deal with words or aspects of words. They have to do with specific aspects of a language such as etymology, synonyms, slang usage, dialect, rhyme usage, quotations, abbreviations, grammar etc.

3.4 PURPOSE OF A DICTIONARY

The primary purposes of a dictionary are:

(i) To find meaning of words, phrases and expressions
(ii) To check the spelling, syllabication and hyphenation of a word
(iii) To check the pronunciation of a word.

The secondary purposes of a dictionary are:

(iv) To determine the usage of a word in terms of current, archaic, rare, slang etc.
(v) To trace the history of a word including its origin, derivation etc.
(vi) To determine antonyms, synonyms and symbols.
(vii) To determine dialect, if any.
(viii) To indicate major places (rivers, mountains and cities) etc.
(ix) To determine abbreviations, acronym, signs and symbols.
(x) To list foreign items.
(xi) To provide quotations.
(xii) To indicate major personal names from history, mythology and the bible.

3.5 EXAMPLES OF DICTIONARY:

English Language Dictionaries.

(i). Simpson, J.A. and Weiner, E.S.C (eds) (1989) The Oxford English Dictionary. 2nd ed. Oxford: Clarendon Press. (12 vols). The purpose of this dictionary is to provide the history of every word included from the date of its introduction into the language. It gives different meaning, spelling, pronunciation, usage etc. at different period and supporting such information with numerous quotations.
(ii). Webster, N. (ed) Webster's (1983) New Universal

Unabridged Dictionary 2nd ed. London: Dorset and Barber. It gives definition in historical sequence including alphabetical list, words, foreign phrases, and abbreviations etc.

(iii) The Compact Edition of the Oxford English Dictionary, (1971) New York: O.U.P (2.vols). It is good in tracing the history of a word in English Language.

Other Examples of dictionary are:

(iv) Random House dictionary of the English language (1966) Jess Stein, (ed) unabridged edition, New York, Random House.

(v) Funk & Wagnell's New Standard Dictionary of the English Language, (1964) New York: Funk & Wagnall's.

Subject Dictionaries

(vi) McGrawHill dictionary of Scientific and Technical terms (1974) D.N. Lapedes (ed) New York, McGraw-Hill.

(vii) Concise dictionary of Physics and related terms (1973) J.Thewlis (ed) Oxford: Pergamon Press.

(vii) Glossary of Chemical Terms (1976) C.A. Hampel and G.C. Hawley (ed) New York, Van Nostrand Reinhold.

(ix) Dictionary of Mechanical Engineering (1985) 3rd ed. U.K., George Newness.

(x) Dictionary of Black African Civilization (1974) George Balandier and Jacques Magnet. (eds). New York: Leon Anmel Publisher.

(xi) The Fact and file dictionary of Physics, (1981): U.S.A Fact and file.

(xii) The Database dictionary (1990) L.A. Leventhel, U.S.A Microtech.

(xiii) The Fact and file on Dictionary of Mathematics, (1998 C. Gibson U.S.A. Facts and file.

Specialized/Supplementary language or specific purpose dictionaries.

(xv) Roget's International Thesaurus,(1977) 4th ed. New York Crovell.

(xvi) Webster's New Dictionary of Synonyms, (1968) Massachussets: G & C Mariam.

3.6 ENCYCLOPAEDIAS

An Encyclopaedia is a compendium of knowledge whether general or specialized. The general encyclopaedia contains informational articles on all areas of knowledge. It gives the basic general principles and the most essential details. It is also organised in alphabetical order for easy reference.

An Encyclopaedia is thus regarded as a storehouse of knowledge providing all information of importance. It is generally used to secure solutions to background questions related to general information and self-education especially for both the specialist and the layman. Encyclopeadias give basic general principles as well as the most essential details of a particular subject. They are arranged alphabetically, giving an overview of the subject with definition, current status, statistics, history and bibliography.

Specialized Encyclopaedia contains informational articles giving vital information limited to a special field of knowledge and arranged alphabetically by subject and names.

Encyclopaedia summarizes each subject with definition descriptions, explanation, history, statistics and bibliography and usually with an index volume, which enables users to easily locate information, scattered in other major volumes.

Encyclopaedias are not frequently published but annual supplements and yearbooks are produced to update the records or information contained therein.

In carrying out any meaningful research paper or work, the first thing to be done is the consultation of general encyclopaedia for the authoritative overview of the subject or topic as the case may be.

3.7 PURPOSE OF ENCYCLOPAEDIA:

(i) It gives facts
(ii) It provides ideas of a particular period
(iii) It gives different view points in a particular topic
(iv) It provides valuable bibliographies attached to the principal articles
(v) It gives illustration (especially children encyclopaedia with coloured illustration.

.8 GENERAL ENCYCLOPAEDIAS

. Encyclopaedia Americana (1990) International Edition, N.Y.: Encyclopaedia Americana, (30 vols.) This publication is a scholarly work with short articles on specific subjects and long articles in broad topics. In most cases, bibliographies are given at the end of each article and it has an index volume.

2. The New Encyclopaedia Britannica, (1990) 15th ed. Chicago: Encyclopaedia Britannica. (30 vols.) *This Encyclopaedia has three parts:*

(a) The single volume, Propaedia that contains the outline of human knowledge. It gives topical guide to the Macropaedia and provides an overview of the various disciplines.
(b) The 19 volume Macropaedia that contains more than 4,000 comprehensive articles on various subjects; and

(c) The 10 volumes Micropaedia that is independent reading reference source. It makes reference to the articles in the Macropaedia.

3.9 SUBJECT ENCYCLOPAEDIAS

1. McGraw-Hill Encyclopaedia of Science and Technology, (1987) 6th ed. N.Y., McGraw-Hill Book Co. (20 vols).
   It contains mainly articles on various topics in Science and Technology. It serves the reference Librarians, educational students and professionals. It also explores all-important developments and achievements in the field of fibber optics for communication, genetic engineering for manufacture of hormones and the development of improved plant and animal breeds, etc.
2. The Universal Encyclopaedia of Mathematics
3. Encyclopaedia of Associations,(1991) 25th ed. Detroit, Gale Research Inc.
   It gives a guide to over 30,000 National and International organizations including Trade, Business and Commercial, Agricultural and Commodity, Legal, Governmental, Public Administration, Military, and Scientific Engineering etc.
   Volume 1 - National Organisations in the U.S
   Volume 2 - Geographic and Executive
   Volume 3 - Supplement
4. Encyclopaedia of Information Systems and Services (1990) 10th ed. Detroit, Gale Research Inc.
   It is a comprehensive guide to the electronic Information and electronic publishing industries.
   It is divided into 2 volumes:
   Volume 1 - Descriptive
   Volume 2 - Indexes
5. The Cambridge Encyclopaedia of Language (1997) 2nd ed. Cambridge University Press.

The Encyclopaedia is organised into 11 parts comprising 65 thematic sections. Each section is a self-contained presentation of a major theme in language study with cross-references included to related sections and topics.

6. Encyclopaedia of Library and Information Science (1976) Allen Kent, Harold Lancour and Jay E. Daily (eds). It deals with Library and Information Science.
7. Encyclopaedia of Computer Science (1976) Anthony Ratston and Chester L. Meek, (eds.) Van Nostrand Reinhold Company.

3.10 HANDBOOKS/MANUALS

Handbooks/Manuals is published by Professional Association or Institutions. It gives addresses and brief descriptions of activities, for example, Chemical Engineering Handbook.

The primary purpose of a handbook/manual is to serve as a ready reference source for a given field of knowledge. Emphasis is normally on established knowledge rather than recent advances.

The more specialised handbook/manual serves as background material to specific subject areas.

Manual or Handbook is usually a small book giving useful facts or simply put a guidebook. It is a treatise on special subject, simple and all embracing, having concise information. It is small enough to be held in the hand, strictly written primarily for practitioners' consultation or reference.

The information inside varies and generally extensively wide.

Examples are:

(i) Handbook of Food Additives (1985) 2nd ed. Vol. 1 edited by Thomes E. Furis, Flonda, CDC Press.
(ii) World Radio/TV Handbook (1977), London: The Riverside

Press Ltd.

(iii) Handbook of Biosolar Resources (1981) Oskar Zaborske, (ed) Florida, CRC, Press.

(iv) Handbook of Modern Solid State Amplifiers,(1974) John D. Lank, (ed) New Jersey, Prentice-Hill Inc. Yearbook/ Almanac

3.11 YEARBOOK/ALMANAC

Yearbook is an annual containing current information of variable nature in brief description and/statistical form published once every year.

It can be also described as an annual publication of current information in descriptive and statistical form. It is very useful for those interested in statistics. It is a useful information covering a specific year.

Yearbook is useful n updating and supplementing information. For instance, the 1999 Yearbook will contain the events of the previous year, 1998.

Yearbooks review the events of a particular year. Examples are: Nigerian Yearbook, Commonwealth Universities Yearbook, EuropaYearbook.

Almanac

An Almanac is equally a yearly publication of statistics and other kinds of information. It may cover a particular field or general fields with emphasis on facts, figures and current affairs. Examples are Whitaker's Almanac, World Almanac and Book of Facts.

Whitaker's Almanac was established by Joseph Whitaker, it gives information on each Country of the World.

World Almanac and Book of Facts has a lot of memorable events in the World. It contains populations of Countries of the World. Etc.

Examples:

Whitaker's Almanac (1990) London: Whitaker and sons.

The 1990 Almanac (1990) 43rd ed. Boston: Houghton Milton Comp.

The World Almanac and Book of Facts (1991) Hoffman, M.S. (ed.) New York: Phares Book.

3.12 DIRECTORIES

A directory contains the list of names and addresses of persons, organisations, institutions and business concerns in an area, town or country in an alphabetical order. For instance, National Telephone Directory.

Examples are:

World Directory of Research Workers in Vertebrate Reproduction (1967): Cassey D (ed.) England, R.R.I.S Ltd.

The Directory of Opportunities for Graduates, (1972) Lamacraft A (ed) London. Commarket Press Ltd.

Kelly's Post Office London Directory (1973) England: James Walker & Co. Ltd.

Learning Dirctory 1970-71 vol. 1 New York: Westing House Learning Co.

Directory of Directories, (1980) Ethridge, J.M. (ed), Michigan: Information Ent.

3.13 BIOGRAPHY

It is reconstruction in print of the lives of real people. Among the first biographies of ordinary man is the Dialogues of Plato (4th century B.C) reveal its subject, SOCRATES, by letting him speak for himself.

It is a written account of person's life or person's life history written by another. It is also a branch of literature dealing

with the lives of person. A person who writes a biography is

a biographer.

Examples:

1. Who's Who in Nigeria (1983) Lagos: Daily Times Publication
2. Who was Who 1916-1928 (1929) London: Adam & Charles Black.
3. Who's Who in India (1973) H. Kothari, (ed) Kothan Publication.
4. Who's Who in France (1975) Jacques Laftte, ed Paris: France. Publ.
5. Who's Who 1989, An Annual Biographical Dictionary, 141st ed. London: A & C Black.
6. Eminent Asians – Six Great Personalities in the New East (1929) Josef Washington (ed) Hall Kennikat Press.

3.14 BIBLIOGRAPHY

The terminology of bibliography is complicated, largely because different terms have been used by different people for the same kind of bibliography, partly because a bibliography can be constructed in such a way that different kinds of bibliographical description or arrangement can contribute to its make-up.

Bibliography is a list of books and writing of one author or about one subject. It is the study of authorship, editions etc of books. A bibliographer is a person who writes or studies bibliographies.

Examples

1. Bibliography of Bibliographies in American Literature (1970) Charles H. Nilon, (ed) R.R. Bowker Comp.
2. Bibliography of Microwave Optical Technology (Solid State Physics Literature Guides) (1976) Vol. 8 New York: A.F. Harvey Plenum Publishing Corporation.

3.15 GAZETTE

It is an official periodical with legal notices, news of appointments, promotions etc of officers and officials. A gazetee gives information about geographical places, it does not define them. In addition to geographical location it gives historical, statistical and other relevant facts about these places. It may also indicate pronunciation because they provide a variety of factual materials about places gazetteers are important reference imputers source.

3.16 GOVERNMENT GAZETTE

This is a publication issued at Government expense or published by authority of a government body as used in America, Nigeria etc. It is any publication in book, serial or non-book form bearing an imprint of government whether Federal, State, Local or Foreign and Inter-governmental organisations such as UNESCO etc.

Examples:

1. Federal Government of Nigeria Official Gazette
2. Kaduna State of Nigeria Official Gazette
3. Oyo State of Nigeria Official Gazette
4. Anambra State of Nigeria Official Gazette
5. London Gazette
6. Edinburg Gazette
7. Cross Rivers State of Nigeria Gazette

3.17 INDEX

It is a systematically arranged list giving enough information for each item to be traced by means of a page number or other symbol indicating its position in a sequence.

A detailed alphabetical list or table of topics, names of persons, places etc treated positions in the volume, usually by page number but often by section or entry number.

A systematic guide to the location of words concepts, and other items in publications, documents and otheer records. An index consists of series of entries appearing in some logical order, usually alphabetical, which enables the user to find them easily, together with reference to show where each item is located.

Examples

1. Applied Sciences and Technology Index 1984, Rose Fever Mankofsky (ed). The H.W Wilson Comp.
2. Index Veterinarians vol. 56, 1988 C.A Inter Walling Foundation, U.K .
3. Current Technology Index May/June, 1990 vol.10 no.3 Bowker Saur Ltd.
4. Current Technology Index 1989 Lib. Association Publishing Comp. London.
5. Energy – a key phase Dissertation Index – (1976) Michigan Universal Microfilms. International Michigam.
6. Index to British Military Costume Prints 1500 – 1914.
7. (1972) Army Museumss O gilby Trust & Robert Ogil by Trust, 1972.

3.18 ABSTRACT

This is form of current bibliography in which sometimes books but mainly contributions to periodicals descriptions are compiled, to enable the publications or articles to be traced and are frequently arranged in classified order. They may be in the language of the original or be translated into English or some other language.

Periodicals which contains only abstract are known as journals of abstracts or abstract journal. Abstract may be indicative mainly directing to the original, informative, giving such information about the original, summarising the

principal arguments and giving the principal data.

They are lists providing summaries of subject content. It permits the retrieval of specific information and are merely descriptive.

Examples;

1. Abstracts of University of Ibadan Theses and Dissertations, 1964-1975. (1979) B.O Toye and S.O Oderinde.(eds) Ibadan University of Ibadan Library.
2. Abstracts on Rural Development in the Tropics (1991) V.6 N 6. Royal Tropical Institute, November – December
3. Dairy Science Abstracts, (1988) C.A.B. International vol. 50 no.4, April .
4. Geographical Abstracts, Regional and Community Planning, Dialog Information Services U.S.A 1988/2 Abstracts S8F/0448 – 0966
5. International Political Science Abstracts. Documentation. Politique Internationale, IP.S.A. A.I.S.P Paris 1988 vol. 38 No.6 . Abstract 4285 – 5300.

3.19 THESIS/DISSERTATION.

This is a thesis or treatise prepared as a basic condition for the award of a degree or diploma.

It is a long written or spoken account especially as submitted for a higher University degree. It is equally a statement or theory put forward and supported by arguments especially a lengthy written essay submitted as part of requirements for a University degree.

Thesis is research works carried out solely or jointly by a scholar in partial fulfilment of an academic degree beyond the Bachelor. They are significant segment of the literature, of all
fields as they record concentrated research. It is frequently original, on special topics, presents an innovation in research,

which may contribute to work already in progress or point the direction for future areas of study. It reviews previous research on the subject.

The outcome of the research carried out has to be defended orally in the presence of a panel of specialist in that particular field.

Examples:

1. Dissertations in English and American Literature.(1968) Lawrence F. McName,(ed). London: R.R. Bowker Company, London.
2. A Thesis on Communication in Climate as a factor in the Job Satisfaction of Civil Servants of Oyo State of Nigeria (1986) Adesina (ed) Ibadan; Dele Braimoh, University of Ibadan.
3. Doctoral Dissertations on Asia. (1991) Vol. 14. Association for Asian Studies Inc. Winter/Summer.
4. The Graduate School Dissertations and Theses 1946-1959. (1960) Chapel Hill, The University of North Carolina Library, 1960
5. Union list of Theses of the University of New Zealand 1910-1954. (1956) Wellington: New Zealand Library Association.
6. A Thesis on Relative Efficacy of systematic Dissertation Self-Statements Monitoring and Flooding Subjects Test Anxiety. (1984) Ayoola Morakinyo, University of Ibadan, 1984.

.20 BIBLIOGRAPHIES

A bibliography is a systematic list of materials for xample books, periodicals, documents or audio-visuals on subject. The unannotated bibliography contains only ibliographic dissertation (i.e. author, title, publisher, date

etc) while an annotated bibliography gives both bibliographic descriptions and description of the contents of the materials listed.

Bibliography is the name given to a list of books and other publications which are arranged on a logical order which have some relationship to each other. There are different types of bibliographies.

(i) General Bibliography

They are not limited to one author, subject, country or period of time.

(ii) Author Bibliography

They list the work by and about one author

(iii) Subject Bibliography

This is restricted to one particular subject

(iv) National or Regional Bibliography They list materials/ publications relating to one particular country or region.

(v) Trade Bibliography

This supply information needed in buying and selling books.

A bibliography can be either complete or selective when it is complete, it includes all works of particular kind and when selective, it covers only an integral part of the work.

Some bibliographies merely list items while others give descriptive and/or evaluative information about the items listed.

These bibliographies may be found in individual books in periodicals articles and in encyclopaedia and other reference books or may be separate books.

A bibliography is a useful source in any search on a subject, because it provides useful and needed information such as:

(1) locates materials in the subject in question provides a means of verifying such information as author's name,

complete title of the work, place of publication, publisher, date of publication, edition, and number of pages.

(2) The ones which gives information on the items listed, indicate the scope of the subject and if the information is evaluative, it comments upon the usefulness of the publication.

Bibliography - Books

Atkinson, Brooks (ed). The Sean O'Casey Reader: Plays Autobiographies Opinions New York: St. Martins Press,
Brecht, Bertolt, (1970) Collected Plays Ed. Ralph Mannhein & John Wilson Vol. 1; New York: Pantheon.
Clark, Kenneth B, Dark Ghetto: Dilemmas of Social Power,(1965) New York: Harper & Reow, 1965.

Enclyclopedias

Nason, Daniel Gregory: "Robert Sschumann" The International Encyclopedia of Music & Musicians,(1958) New York
Dodd, Mead, & Co., 1958, pp. 1683-87; Alexander, "Encyclopedia Brittanica, 1971. Schumman, Robert

Magazines

"Pity the Poor Purpose Newsweek 6 Sept. 1971, p.60 Stanley-Brown, Joseph "My Friend Garfield" American Heritage (22 Aug. 1971) pp 49-53, 100-101

Newspapers

Baker, R. "A Timid Question" New York Times 31 Aug. 1971, p.33. New York Times 31 Aug. 1971; p.18.

Government bulletin

The Foreign Assistance Program: Annual Report to the Congress for Fiscal Year, 1970, Washington, D.C.

Government Printing Office, 1971
Preserving Our Air Resources; New York State; Department of Health, 1968.

Unpublished ph.d dissertation

Phillips, O.O. "The Pre'history of the American Indian" Unpublished Ph.D Dissertation, University of Chicago, 1962

Harvard Style

They should contain full bibliographic details
Within the text – author's last name followed by a comma and year of publication all in round brackets e.g. (Ajala, 1999).
At the end of the articles a reference list in alphabetical order

Books

Surname, initials, year of publication, title, publisher, place of publication; pagination e.g. Ajala M. (1999) Library in Contexts London O.U.P. 135pp.

Articles

Surname, initials, year, "title" journal, volume, number, pages, e.g. Adimorah E.N. O. (1993) Information needs of Scientists and Technologists in Nigeria" Leading Libraries and Information Centres, Vol. 1; No.2, pp. 17-24.
If there is more than one author, list surnames, followed by initials, All authors should be shown or indicated.

References

1. The Encyclopaedia Americana (1990) International ed. Danbury: Grolier Inc.
2. Encyclopaedia of Association (1990) 25th ed. Detroit Gale Research Inc.
3. The New Encyclopaedia Britannica (1990) 15th ed. Chicago Encyclopaedia Britannica Inc.
4. The Oxford English Dictionary (1989) 2nd ed. Oxford: Clarendon Press.

CHAPTER FOUR

4.0 COMPUTERS IN LIBRARIES

4.1 Objectives of the Chapter
4.2 Definition of Computer
4.3 History of Computer
4.4 Classification of Computer
4.5 Computer Network
4.6 Trends in Library automation
4.7 Areas of Computerization in Libraries
4.8 Advantages and disadvantages of Computerization of Libraries
4.9 Requirements for Computerization of Libraries
4.10 Problems facing Computerization of Libraries in less developed Countries
4.11 Summaries

4.1 OBJECTIVES OF THE CHAPTER

At the end of this chapter you are expected to be able to understand what computer is, and how it perform its work. You are also expected to understand that computers are divided into two parts (Hardware and software) and the two parts complement each other. Also you are to understand the components that make up hardware and the types of software in computer system. You are expected to understand the work of operating system software (OS), Utility software and application software.

Other things you are expected to understand in this chapter are: The areas of computerization in the Libraries, types of networking system, requirements for computers in libraries in Nigeria and developing countries, advantages and disadvantages of computerization of Libraries.

4.2 WHAT IS COMPUTER?

Before we define computer, let us perform this simple task of multiplication by turning ourselves to computer. To do this, follow the instructions that follow and perform the task as directed.

The Task: Multiply 8 by 9

Solution:

Your two hands contain five fingers each. Now let the THUMB finger represents 6 and the rest fingers to represent one each, on the two hands.

To solve the task, fold your thumb fingers which represent 6 on each hand, then fold two more fingers on left hand so that when you add 6 to 2 (i.e. 6+1+1) you will have 8 on the left hand. Do the same for right hand but fold three fingers to make it 9. Now, you have some fingers unfolded. Multiply

the number of the remaining unfolded fingers by each other and write down your result. This is the unit part of your result. Then sum up the remaining folded fingers taking each of them to be one and write it at the left side of the unit number you have written down before. The result of this task gives us 72. Try another task by following the procedure using any two digits between 6 and 10 inclusive, ($6 < x < 10$) e.g.

(i) 6x10, (iii) 7 x 7 (iii) 6 x 7

You will see that in the case of 6 x 7, the multiplication of the remaining fingers give you 12. Write 2 and add the '1' digits to the folded fingers to give you 42.

By the task you have just completed, you have turned yourself into computer:

The data you accepted is the 8 and 9; the operation you perform on it is multiplication; your input devices are your fingers; while your output device could be your mouth, if you pronounced it, or your hand with which you have written the answer down; and of course, your brain which send signals to various parts of the body while performing the task, is your central processing unit. In summary, you will discover that you accepted data, 8 and 9, and you processed it through a method using instructions and came out with a result, which is the output of your processes.

Computer, therefore, can be defined as:

"A Machine which is capable of accepting data, process it through an instruction or set of instructions and output the result.

4.3 HISTORY OF COMPUTERS

Since this book is not a Computer textbook, it is pertinent to be brief in discussing the history of Computers. Basically, computer is divided into four historical generations:

1st generations, 2nd generation, 3rd generation and 4th generation.

1ST GENERATION COMPUTERS

The first generation computers were based on vacuum tube Technology. Several thousands of tubes were inter connected to make the Computer system. As a result of these connections, the 1st generation Computers were very big and large physically, they generate a lot of heat which makes them break down easily as a result of which they are not reliable. The 1st generation computers are very cumbersome and only the engineers can manipulate them. In order to find solution to these problems, Second generation Computers were developed.

2ND GENERATION COMPUTERS

The second-generation computers were developed when transistor technology came to replace vacuum tube technology. As a result of this development, the enormous size of the computers was drastically reduced. Their performances were improved. But the problem with 2nd generation computers is that it is still big and only the engineers can operate them. These also led to more improvement, which was realized in the 3rd generation of computers.

3RD GENERATION COMPUTERS

This generation of computers was based on Integrated Circuit (IC) technology. In IC technology, thousands of Transistor and other components are fused together into a single component called chip. The level of integration during this generation was small-scale integration (SSI) and Medium Scale Integration (MSI). Computers become more users

friendly at this stage because non-engineers can now use them and there was tremendous reduction in size of the Computer system. Heat emission was also greatly reduced.

4TH GENERATION COMPUTERS

While 3rd generation of Computers involved fusion of Small Scale Integration and Medium Scale Integration, the 4th generation of Computers involved very Large Scale Integration (VLSI) and this led to further reduction in the physical sizes of Computer Systems without loosing the efficiency. 4th generation Computers is the present generation of Computers. They are more users friendly and easy to operate.

The 5th generation Computers is the future generation. During this generation, Computers will be processing knowledge rather than data. A good example of this is the Knowledge Information Processing System (KIPS) and Artificial Intelligent (AI). In this generation, Computers will be taking decisions based on the available alternatives, thus it will be reasoning like human being.

4.4 CLASSIFICATION OF COMPUTERS

Computers can be classified by age, 1st, 2nd, 3rd, 4th and 5th generation Computers. It could also be classified by level of performance mainframe, minicomputer and microcomputer; but this is very difficult nowadays because the advances in technology have made possible for microcomputer to be as capable and efficient as mini or mainframe computers. However, this capability does not make a microcomputer to become mini or mainframe computer.

Types of Computer

Some Computers operates on discrete variables e.g. numbers. This type of Computers are called **Digital Computers**. Others operates on continuous changing variables e.g. temperature, pressure etc. These types of Computers are called **Analogue Computers**. The last type, **Hybrid Computers**, combines the features of both analogue and Digital Computer.

Computer is divided into two main parts: Hardware and Software. Hardware is meant by the touchable component parts of the computer system while software means the programs that directs and coordinate the activities of the computer e.g. Operating System, OS. The subdivision of hard and software are further discussed below.

Hardware

The basic components of a computer system's hardware are (i) Input unit, (ii) central processing unit, and (iii) output unit.

Input unit: Input unit is any means or device used to input data into machine. It implies that input interfaces the user to the Computer Machine. Some examples of input units are Console/Keyboard, diskettes, scanners etc.

Generally, inputs are done either by on-line or off-line batch process. When it is done by on-line, the data are entered directly to the CPU through an input device and as manual processing is involved.

Central Processing Unit (CPU)

This is the unit where all processes are carried out. CPU is further divided into

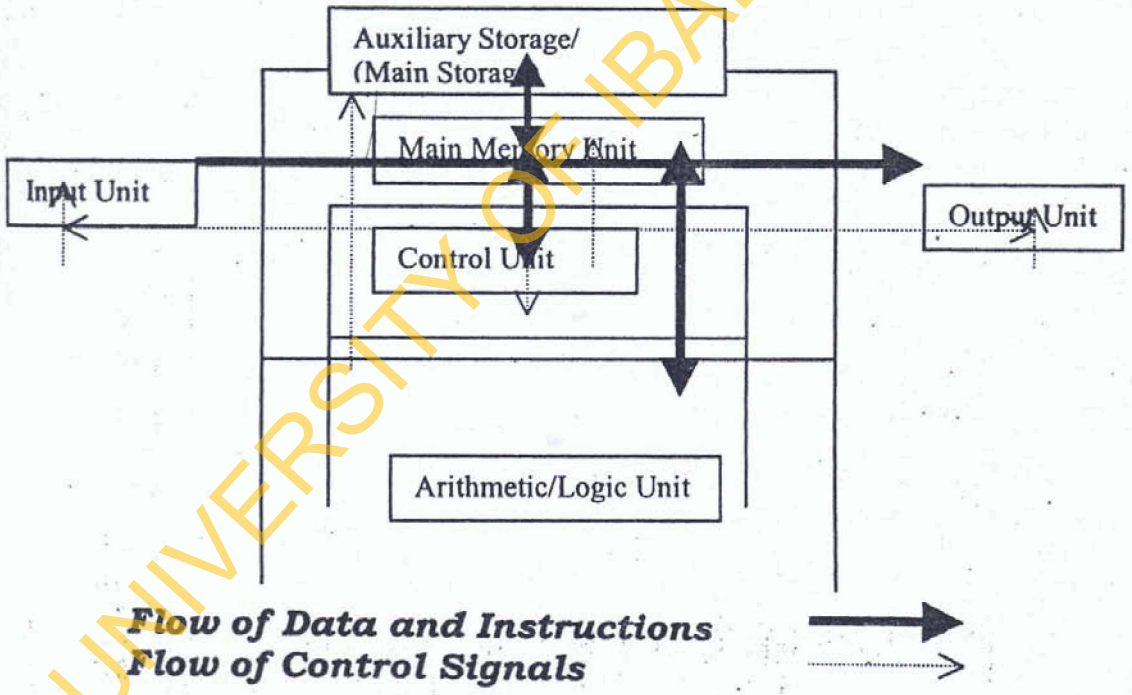
Memory Unit (MU), Control Unit (CU), Arithmetic and Logic Unit (ALU).

Memory Unit is the store where data and information are kept while **Control Unit** is the unit that controls the activities of all the other units. It is this unit that sends signals to various parts of the Computer Systems whenever a hard copy of information is needed.

Arithmetic and Logic Unit (ALU) is the unit that performs all the arithmetic operations, such as additions, subtractions, multiplication and divisions as well as logical operations (NOT, AND, OR).

Output Unit

This unit is where the users get feedback on whatever operation they may have performed with the Computer system. It interfaces the Computer to the outside world. Some examples of output units are VDU or Screen, Printers, Plotters etc. The diagram below indicates the basic components of a Computer system.



SCHEMATIC DIAGRAM OF A COMPUTER

In library and information settings, other periphe are added to complete Computer System to make multimedia system. Such peripherals are CD-R(Telephone via MODEM, fax etc.

Software

Software can be defined as suits of program writter enable computer hardware perform its functions prope There are different types of software. The two main typ are systems and applications software.

Systems Software [Operating System [OS]

These are the programs that control the way the comput operates or provide facilities that extend the gener capabilities of the system. Operating System is a compl collection of programs which controls the performance the computer to make sure that the hardware are properl efficiently and orderly used by other application program Usually, application programs can only work when used i conjunction with the appropriate operating system. Fc example TINLIB DOS version can not work under UNI operating system. System program includes operatin systems, utilities, language translators, etc.

Utility Software

Utility Software otherwise known as service programs are the software used for the performance of specific tasks such as merging, sorting, copying etc which are common daily operations or routines.

Some of service programs include:

[a] Copy utilities
[b] File maintenance utilities
[c] Debuggers

[d] Formatting utilities
[e] Editors
[f] Sorting/Merge utilities.

[a] Copy utilities

Copy utilities are used in various forms to duplicate or copy the contents of one file to another. They can also be used to transfer data/information from one storage to another. Copy utilities can be in the form of backup, restore, copy, etc.

[b] File maintenance Utilities

Files that are frequently used needs to be updated over time. In doing this, file maintenance utilities are used. Therefore, file maintenance utilities are the programs used specifically for updating files.

[c] Debuggers

If the use of a Computer is not controlled, virus may be transferred to such a system through diskette or other auxiliary storage. If such a situation occur, the data in the Computer memory will be corrupted. To remove the burgs/ virus, debuggers and antivirus are used. This implies that Debuggers are the software that is used to remove error or bugs from a program.

Formatting utilities

Preparation (Formatting) of any auxiliary storage such as diskettes, hard disk etc is necessary before the computer could use such storage. Formatting utilities are the programs that are specifically used to prepare such storage.

[e] Sort/merge utilities

If records in a file is to be arranged in a particular order, it is the sort utilities that is used to perform the task; while merge programs are used for merging related records in a file or merging related files.

Types of Programming Languages

In writing programs of instruction for computers, there are three hierarchies of the languages in use. These are:

Machine Language
Low level Language
High level Language

Machine Language

This consists of chains of binary numbers which are the codlings or language that computer understands. Though machine language makes the works of computer to be fast, it is cumber some to write, as the programmers have to write all his instructions in zeros and ones. In order to alleviate this problem, Low level language was invented.

[2] Low level Language

This is also a machine-oriented language. Low Unlike machine language that consists of binary numbers, level Language depends on types of machine, therefore the structure varies from one machine to another. A good example of this is Assembly Language.

Though less burdensome than machine language, Low level language is still cumbersome.

(3) High Level Language

High Level Language is a procedure oriented language that is a restricted from of the natural language used in

programming. Examples of such language are BASIC (beginner's All-purpose symbolic instruction code), FORTRAN (Formula Translation), COBOL (Common Business Oriented Language), C, C++, etc.

Language Translators

In order for the computers to be able to carry out the instructions written in High level or Low level languages, the computer will have to convert the language to computer language. This is possible through the use of Language Translators. Language translator, therefore is the software that translates any programming language into computer language.

APPLICATION (PACKAGES) PROGRAMS/SOFTWARE

These are programs written to solve a specific problem.

For example a Library package, such as TINLIB can not be used to work out or calculate wages and salaries. In the same vein stock taking programs can not be used to catalogue books in the library.

There are a number of application packages/programs designed specifically for library use. Some of them include TINLIB, micro-CDS/ISIS, X – Lib, IN-magic etc.

In principle, all library packages perform the same functions but their mode of operations differs. This depends on the target or transaction or type of libraries concerned.

Library software could be obtained in a number of ways.

Off the shelf purchase of the package

Adaptable packages

Drawn programs

Off the Shelf Purchase of the Package

These terms are used to describe those packages that

has been drawn, tested and internationally accepted for the library purposes. These categories of package can not be used for any other purposes other than library operations. They usually have trade mark and copy right ownership. A good example of this is TINLIB by IME Ltd.

(ii) Adaptable Packages

In automating a library, a data base application package such as Dbase IV+ can be used to design library database that could be used by the library. When a library carries out such work we say the library has adapted D base IV to the use of their library. This type of package can be used in-house only. Any other library that finds it useful to them could also use it. It must be noted that this type of package has no copy right ownership, as a result anybody that finds it useful could, by arrangement, copy it for his or her own use without obtaining any license for doing so.

Drawn Program

Apart from outright purchase of library application package and adapting other Data base packages, library application package could also be obtained by drawing a program for database files using languages such as C, C+ +, Pascal, Basic etc. This method of forming library application package involve highly skilled programmer and systems analyst who could convert the information that librarians need for their work into database for everyday use. This process is usually not embarked upon by many librarians, as it is time consuming unless there is special need for it.

4.5 COMPUTER NETWORK

Computer Network can be defined as inter connection of two or more independent Computers and the peripherals. However, this is distinct from distributed system that involved

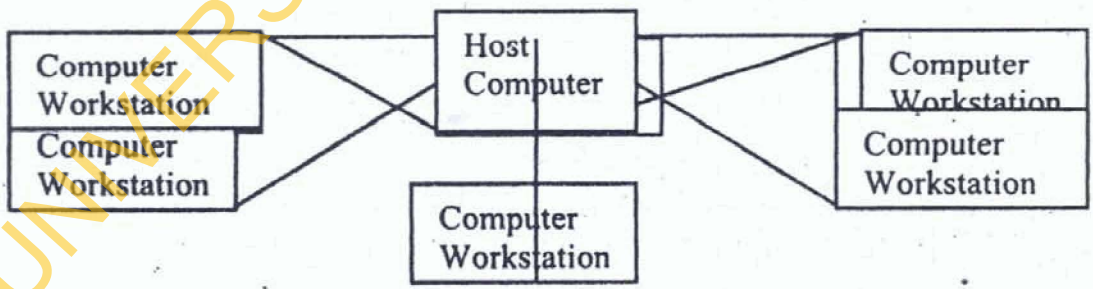
separate/different sites, cities or countries, it is refers to as WAN or LHN. Example of this is Internet.

Structures of Network

There are various structures of computer network. The structure in use depends on the type of network in operation. When Network is LHN it is more economical to use satellite transmissions between Imps (Interface Message Processors) rather than cables. In the case of LAN cables are used to interconnect the computers in the Network systems. Some standard network structures are as described below:

Star Network

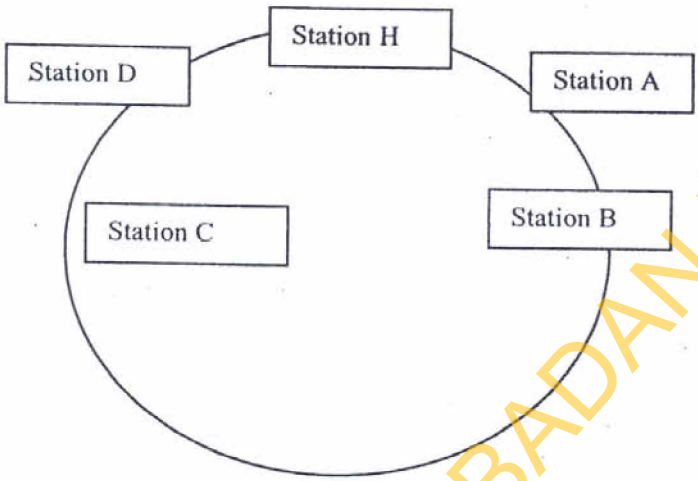
This is a structure whereby the host is at the center and other stations are directly hooked to it. Data Communication for this type of structure is always through the host. e.g. if station A want to communicate with station B, the message has to pass through the host. This line of data movements seems to be a major disadvantage for this structure as the whole system breaks down if the host is in problem.



Schematic Diagram of Star Network Topology

Loop or Ring Network

In this type of structure, the computers are interconnected in circular form. If message is sent through host H to station C the message can not get to C directly without passing through the station between H and C and vice versa if feed back and sent back to 'H'.



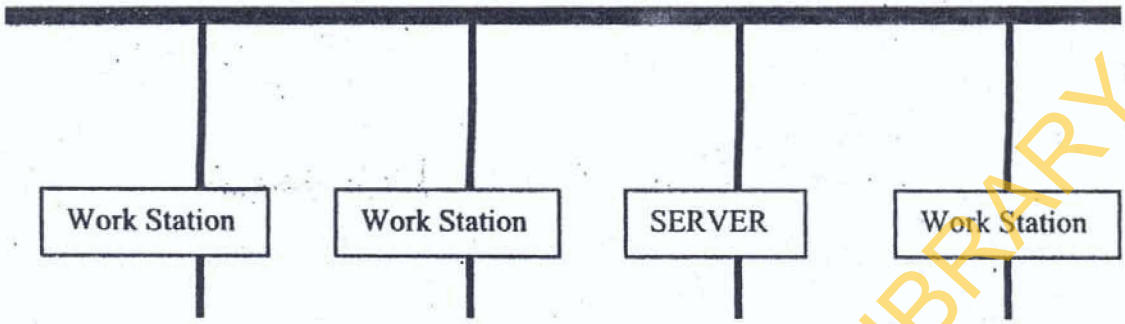
Schematic Diagram of Loop/Ring Network Topology

This implies that if any of the computers in the tructure breaks down the other computers in the system an not communicate each other unless the bad computer s by passed or repaired. Also if there is problem with the able all others can not communicate data to each other.

IULTIDROP OR BUS NETWORK

Bus structure is the type of structure that allows near/parallel connection of computers on the same main etwork cable. When computers are connected in Bus form, ach of the stations can communicate with the host or each ther without necessarily passing through other ones. This nplies that the damage of any computer between two ommunicating computers does not affect data transmission.

Also if any of the cable is damaged, it does not affect the network system unless it is the main network cable. However, the main setback for bus topology is that rate of data transfer slows down as more computers are connected to the network.



Schematic Diagram of Bus Network Topology

ADVANTAGES OF NETWORK/DISTRIBUTED SYSTEM IN LIBRARIES

There are a number of advantages in network system. Resources could be shared by all the system on a network. In a network system, resources could be distributed to different stations so that it is not concentrated in a particular system. This is safer as crashing of harddisk of one of the system will not affect other packages on the other systems. It is also cheaper to be on network than to have different systems standing alone.

Other advantages are:

Better local control. When computers are on network, each unit of the library will be able to control the data entries of their unit thereby ensuring that the entries are error free resulting into good services;

There is also reduction in the cost of man-hour as there will be no delay in transmitting and processing of data.

For example serials librarian does not need to wait until acquisitions librarian finish his own job before he can work at the terminal. Data from both ends can then be merged without any copying process.

The sharing of resources, both computers and human and information is also enjoyed on network system. For example single network version of library application package could be purchased and installed in server for other terminals to share instead of installing it separately on other computers.

The provision of local facilities without the loss of central control.

The even distribution of work, processing loads etc.

Improved communication facilities.

DISDVANTAGES OF NETWORK

There is no general disadvantage of networking system apart from specific disadvantage for each type of network topology. What could also be considered, as disadvantage is the initial cost of putting the network in place. Data security is another problem in networking but could still be controlled.

LIBRARY AUTOMATION (COMPUTERIZATION OF LIBRARIES)

Computerization of libraries is mean by application of computers to perform all or part of the task under library settings. It all the library operations are not computerized we say it is partly computerized; otherwise it is fully computerized.

4.6 TRENDS IN LIBRARY COMPUTERIZATION

The Technology

"Text Searching started on mainframes, and became in the 70's an important information resource in North

America and throughout Western Europe. Certain publishers of paper abstracts, such as chemical abstracts, Excerpta medica, or pergamon, became hosts of line databases which could accessed through telephone lines – so telecommunications advances were an important aspect to this development. Some part of Southern Europe as it is happening in less developed countries today, could not take advantage of this information boon, due to poor telecommunications networks in the countries.

At the local library level, the subscription charges to these online database were relatively onerous, so the bigger academic and special libraries tended to be the major clientele – often providing a service to the smaller, poorer libraries by undertaking searches on their behalf.

In the earliest days, library automation at the local level concentrated on the control of the collection, the sense of keeping track of what had been loaned to whom, and for how long. The early library software packages were circulation packages which had a short, little catalogue, and the only access was numeric; for a title, its accession number and the time. Cataloguing at local level and the associated text searching were not possible with the available technology.

Then, in the 80's advances in microchip technology increasingly enabled efficient data storage and text searching on smaller computers, and the requirements of local libraries became more concentrated in this area. The existing library suppliers had two alternatives; Fix onto the existing circulation system a searchable catalogue; or scrap the existing system and start again.

Generally speaking, the first option was chosen – which has for all the early systems meant simply that the evil day of a rewrite was put off for a few years. In the library automation market, it was good to be first while alternative

technologies did not exist, but once technology caught up, it was nicer not to be first".

System Available

A common system in Great Britain during the "circulation only" phase was supplied by Sperry. Elsewhere, CLSI and CEAC were earlier market leaders. These companies have been severely hampered by the old design of their systems, and have had great difficulty keeping up with current trends.

System which were developed later were able to take advantage of microchip technology and new operating system such as pick, UNIX, designed around the relational database concept. One system that looked very modern in the mid-late 80's was dynix. Its chosen operating system was PICK – an unfortunate choice, given today's taste for UNIX.

TINLIB is a system widely used today all over the world, which was developed originally on DOS, but was since ported onto a number of UNIX platforms. Its original designed was remarkably forward-looking, and has remained valid today, as other processing not to mention the increasing demand for integration of multimedia collections. TINLIB is able to be expanded from a single-user DOS system to a multi-user DOS on a LAN, and can be seamlessly moved onto Unix without data loss or the need to transfer existing data.

Micro CDS/ISIS is another versatile system that is widely used. MICRO CDS/ISIS is designed by UNESCO to facilitate bibliographic exchange among the libraries. It is also based on DOS and can work on network system.

Other systems available are x-lib, IN-magic, GLIS etc.

The Future

Having seen the generational nature of library

Serials Control Unit

This is the unit that deals with library materials such as magazines, journals, newsletters etc. Computer can be used to perform all the functions of this section/unit starting from ordering process to the time the information is made available to the users. It should be noted that the same process, like that of acquisitions unit is performed in serials unit but with particular reference to serials items. Serials module, therefore consists of processes such as: Maintenance, ordering, invoice/claim/cancel/return, routine lists and status. It also contains serials checking where receipt and claiming of individual serial issues from suppliers are handled. Computer can also be use to track movement of journals and other serial items. This can be perfectly done under routing lists.

Circulation Unit

Circulation Unit is a very important unit of any library. It is referred to as the interface unit between any library and its holdings on one hand and the users/clientele on the other. Computers can be used in libraries to register users. In doing this, data about users, such as Name, address, areas of interest/specialization and other useful information about the users are input into the computer system. This information about the users will enable the librarian to know how to deal with them especially when it comes to selective dissemination of information (SDI). It is also used to perform other circulation operations such as issuing, returning, renewal and reservations of items. It is also used to calculate/ determine fine due to users, in case of overdue. Using computers in libraries can also send overdue notices.

Technical/Ctaloguing Unit

This is another very important unit of a library. It is in this unit where cataloguing and classification of books are done before shelving. Computers can be used to perform all these operations except shelving. It is used to perform operations such as Data entry, Authority control, Downloading Public access and production of hard copy.

Data Entry

Bibliographic information such as title, Author, ISBN, Data of Publication etc., about books are entered Into the computer system. This facilitates the retrieval of such books as they are automatically linked to the circulation module.

Authority Control

Computers can be used to control the level of authority of the staff and users of library holdings. For example, users can only be allowed to search database for the materials they need while the cataloguers can be allowed to search and edit files.

Down Loading

In some occasions, materials needed by users may not be available in the library. When this situation is faced, the librarians have to contact other libraries through, say, Internet, or other means of network. When the information is sourced it has to be down loaded (i.e. copied to the local library) from the source library for the user.

Hard Copy

When any information is obtained on the system, it is refers to as soft copy. But incase the user want a copy of the

viewed information. The printout of the information has to be made. This is what is referred to as hard copy.

Public Access

Entry point of users to bibliographic holdings of any library is card catalogue. In order to remove the rigour and time wasting in searching card catalogue, computers are used. Through OPAC (Online Public Access Catalogue), bibliographic searching are made easier and less time consuming.

Refrence and Services Unit

In this vital material such as Encyclopedia, Dictionaries, and Handbook that cannot be loaned out to users are kept for their use. Users can only consult these materials and leave them in the library. At most the user can make photocopy of the useful pages to him. It should also be noted that these materials are very expensive and, in some cases, in volumes as a result of which it is uneconomical to purchase multiple copies of them.

Computer can be used to render these services to users. Latest developments in technology such as CD-ROM have made it possible to put the whole volumes of Encyclopedia on a disk, which could be read by computer. If a hardcopy information is needed it could be printed out from the disk. Other reference materials such as journals and Abstracts are now available on CD-ROM e.g. DNA and CELL BIOLOGY, INDEX MEDICUS, LISA etc.

Administrative Unit

Administrative unit is usually the librarian's or head of a library 's office. This is usually the place where activities

of other units of the whole library are coordinated. In performing their tasks in this units, memos, - letters, documents are produced everyday. In order to be effective, computers are used to perform these operations. Application Packages such as WordPerfect, WordStar are used for memos; FoxPro; Dbase V are used for database; while Lotus 1-2-3 and the likes are used for accounting purposes.

4.8 ADVANTAGES OF COMPUTERIZATION OF LIBRARIES

Time Savings

Virtually every operation in the library could be accomplished better if computers are used. Consider a researcher looking form materials to accomplish his work; he needs to go through many textbooks, journals and other materials. This could be an enormous task if it has to be done manually. The accuracy and the speed with which computer would perform these tasks will make the job easier for the researcher. Hence he could finish the work on time.

Space Savings

The fact that technology has made it easier to store very large information in a very small and more compact place has given another score to computerization of libraries. Technology has made it possible to store voluminous reference materials such as encyclopedia on a CD-ROM. As a result of this, cost of providing space for the storage of such items is saved. The implication of this to libraries is that libraries need to be a very large house again.

Infrastructure

Another essential requirement for library automation is good infrastructure. Adequate building room with air conditioner, good lightning and clean power with adequate economy is very essential for efficient performance of computer systems on one hand and effective performance of concerned staff on the other. In a situation where supply of power is erratic, stand by generator must be provided. There are other peripherals such as UPS and stabilizers, which prevent power surge from destroying the computer systems. Adequate facilities such as good toilets should be put in place for personnel.

HARDWARE

The general description of the minimum computer hardware required for computerizing a typical library is discussed here.

Any library typically consists of the following units namely:

Acquisition Unit
Cataloguing Unit
Readers' services unit, which may be divided into
Circulation or loan desk.
Reference
Reservation;
And lastly,
Serials unit which usually stand as a unit on its own.

As a result of this multi unit nature of libraries, the hardware components of the computerization of any library must be such that has more than one access point. If a library is computerized with micro-computers this implies network of micro-computers or distributed system or of micro-computer and dummy terminals linked in a client server setting.

The basic required component of micro-computer for computerization of library is divided into five major ones: They are:
Mother board;
The Processor
The memory
The storage and
Input/Output system

Mother board

This is the most important part of micro-computer. Infact, it is just like the central nervous system in the human body. Motherboard otherwise known as system board, is a large printed circuit board (PCB) which holds most of the main electronic parts of the computer including the processor and memory chips.

The printed circuit (PC) on the motherboard (MB) is the conduit through which signals are routed to various parts of the computer. In addition to the printed circuits, expansion slots are also available on the Mother board. It is these expansion slots that allow computers to take on more extra devices e.g. Scanner, phones etc. The cards for the extra device is fixed in the slot on the motherboard of the computer and they're connecting suckets exposed at the back-end. A good motherboard that will allow for extra devices should be acquired for library use.

The Processor

As mentioned earlier on, the processor, otherwise known as central processing unit (CPU), is where the computer carries out all the arithmetic and logical calculations including other processing.

There are two important parameters for determining

the quality of a processor. These parameters are:
The quantum of data or program it can process in one pass (capability); and
Its turn-around time i.e. the time between when instruction is passed to the system and the time feedback is received. The implication of this to the librarian is that in choosing computer for library automation, volume of work to be done should be considered as a result of which a computer with high speed and high capability should be chosen.

The Memory

The memory of a computer is the part in which data and programs are stored for use by the computer. Memory is divided into two parts; Read Only Memory (ROM), and Random Access Memory (RAM).

ROM (Read Only Memory)

This is the part of computer memory where collections of programs such as BIOS which controls the working together of the computer components, has been permanently pre-store by the manufactures of the computer. It is this part of the memory that gives computer its identity and character. It retains program at power failure.

RAM (Random Access Memory)

RAM is that of computer memory where programs and data which computer is currently working on are loaded for easier and faster manipulation by the processor. RAM looses its contents easily where there is power failure. This supports the facts that uninterrupted power supply (UPS) must be provided to sustain RAM for as long as it is required to save its current contents to a more permanent disk storage. It is worthy of noting that the size of the RAM, measured in bytes

(KB, MB, etc), determines the amount of data that can be processed at once since what can not be completely transferred to the RAM can not processed. This implies that if a program is larger than the space on a RAM, the computer will not run the program.

The implication of these to the libraries is that the type of computers to be acquired for library automation must have a very large RAM size to be able to accommodate large programs at a time.

The Storage

Storage of a computer is divided into internal and external storage.

Internal storage can be referred to as the storage within a computer system and this is usually in the form of harddisk of a computer. It is the repository of all data generated by the library; as a result of this it is the ultimate measure o the capacity of the computer. To determine the appropriate harddisk for a library, both its size as well as the rate of data transfer between it and the processor is considered. The faster the rates of data transfer the better the harddisk.

Unlike RAM, harddisk is not a volatile storage. Data stored in its always remains secured as long as it is in good condition.

From the afore discussions, it is clear that librarian must consider a harddisk that is fairly large in size as well as having high rate of data transfer when computerizing their library.

External storage is the storage that is not residing within the computer system. They are usually in the form of floppy disks which comes in two varieties (31/2 and 51/4) tapes, Compact Disk Read Only Memory (CD-ROM), Magnetic tape etc.,

The capacity of a diskette, which is determined by the ısity per surface of the magnetic materials, is of various gnitudes. There are those of High Density, Double Density D). The HD type can accommodate more data than DD e. This implies that, in view of the fact that library records usually very large, librarian must choose a diskette that n accommodate more data, else units of diskette to be rchased will be very large therefore will not be economical. skettes can be accessed randomly. This makes it more itable as it saves time.

Tape is also made of magnetically coated strip of nylon- te materials which usually comes in cartridges. They are sually used for backups where the data is very large. ccessing of information on it is sequential.

D-ROM (Compact Disk Read Only Memory)

In recent times, technology has made CD-ROM more opular as storage medium. Data are permanently written n CD-ROM once with laser beams and the data can be read nany times, as long as the CD is in good condition. The najor advantages of CD-ROM over other storage media is hat it can accommodate very large amount of data in a very small space thereby solving the problem of large storage place. Another advantage of CD-ROM to the librarian is that, it ensures insects, termites and any other hazards, apart from excessive heat and fire can not destroy permanent record keeping which.

SOFTWARE

Like any other area of application of computers, software is another important requirement to be considered when a library is to be computerized. Choice of software depends on those parameters such as: The focus or area of

specialization of the library (Technical, Academic or Public Library); volume(s) of the work to be handled by the system; the type of users to be served; and of course, the operation of each unit of the library. Other parameters are the supplier, who can either be 'Dedicated' or 'portfolio' supplier. Dedicated Suppliers: are those suppliers dealing in library system only while Portfolio suppliers are those suppliers dealing in several products and services of which library system is only one; the origins of the system (whether or not the package originate from professionals who understand the requirement of the library system).

All the above mentioned parameters are general parameters to be considered. Apart from the general parameters, there are other specific parameters that need to be considered in computerization of libraries. The specific parameters arise from the job operations of each of the units of any library. Some of them are as discussed below.

ACQUISITIONS

Operations of these unit ranges from ordering, receipting, claiming, fund, accounting, inquiries, reports, and statistics on the suppliers, books and non-book materials. The type of software to be considered should have provisions for all these operations so that everything can be done online.

CATALOGUING

When a software is to be used for cataloguing in a library, parameters such as: data entry and manipulation, authority control, provision for accessing external databases for downloading of records, access and cataloguing provision, public access (OPAC) and production of hardcopy of the catalogue e.g. printed catalogues and listings, must be considered.

CIRCULATION CONTROL

This is the interface unit between the library and the users. It is at this unit that: users are registered, books are loaned and discharged, renewed and reserved. Various information about users are also kept in this unit. Software for library must have provision for all these operations of circulation unit. In addition to the above, any good software must be able to make provision for short-term loans, borrower file inquiries about borrowers, generation of notices for overdue, fines, recalls etc. and generation of reports and statistics relating to the operation of the unit.

SERIALS CONTROL

The activities of this unit is virtually like that of the acquisitions unit but with focus on journals and other periodicals. Library application package must have provision for pre-order searching so as to establish if title is on file. It should be able to do such things as: creation of orders online; system generated date of order and order number; provision of supplier data; warning if fund is about to be exceeded.

It should also be able to perform check – in operations such as retrieval of records on varieties of keys; display of issue expected; provision of partial receipts; provision of routine lists individually for title checked – in etc.,

Other things to be provided for in library software are processes of routine lists for specific copies of serials, claiming, fund accounting and inquiries.

MAINTENANCE

Maintenance is a very vital factor to be considered when computerizing a library. Many library automation

projects have failed due to lack of maintenance culture. Equipment's such as computer set and their peripherals need to be adequately maintained to allow for the continuity and efficiency of the system.

SECURITY

Security requirement of both staff and the automation systems must be considered before embarking on computerization of a library.

Security requirement is divided into two parts; these are physical security for the hardware, and data security. Sources of security threat to library computerization can be identified as vandalism, water damage, insects and rodents, lightning and fire disasters. Physical security must be provided for the system against that and other physical destruction such as mentioned above that can occur to the computer systems. This could be done in many ways such as putting burglary proof in place where the computer is sited. Unauthorized people could also be prevented from having access to the computer site.

There should also be adequate provision for data protection. Data lost could occurs as a result of such things as electrical failure, systems corruption, mishandling of input or output devices (diskettes, magnetic taps etc) and human errors among others. Unauthorized access to database must be prevented so as not to corrupt or cause total loss of data.

Data could be protected in many different ways. Some of the ways are:

- Preventing unauthorized person from entering the computer room;
- Introduction of passwords for different level of users;

Changing passwords whenever it was discovered that the one in use is vulnerable;

- Using a password that is known to only the owner of the password.

Apart from the above-mentioned ways, security could be provided for data by preventing electrical failure through provision of uninterrupted power supply (UPS). This will enable the user to ease out normally when there is power failure.

Input/output devices such as diskettes and magnetic tapes should be properly handled and stored in a place where the temperature does not exceed the limit specified. In fact, all the conditions indicated on these devices by the manufacturer must be strictly observed for optimum utilization of the devices.

Other human errors such as accidental use of wrong keys that could lead to lose of data should be taken care of. Some application packages do crash if proper channel is not taken to exit it. To prevent crash of such packages, a device (software) that can call the attention of users to what he has done if such sensitive operation like delete is performed should be put in place. This will prevent accidental loss of data in such a case.

4.10 PROBLEMS FACING COMPUTERIZATION OF LIBRARIES IN LESS DEVELOPED COUNTRIES.

There is no doubt that there exist a very wide gap between library automation in advanced countries of the world and the less developed countries. A number of factors are responsible for this. According to Sodipe (1991), among the factors militating against effective computerization of libraries in less developed countries are as follows.

Lack of good infrastructures such as stable electricity

supply, poor telecommunications facilities.

Absence of government policy on information and computerization

Lack of proper education and awareness on the part of information personnel.

Lack of urge and a strong case from relevant professional bodies.

Lack of appreciation of the importance of information as a highly potent instrument of national development, resulting in our inability as a nation to see the need for the kinds of value that the computer and computerization gives to information.

Low ranking of libraries in the nation's priorities at the local, state and national levels, makes it difficult or impossible for policy makers to see the needs for their automation.

In adequate funding resulting from (5) and (6).

No. Central control by the government to monitor, direct and coordinate automation projects of individual library, inspite of the central computer committee (CCC) established some years ago at the federal office of statistics.

To succeed in library automation, all the above mentioned problems must be looked into with the view of finding solutions to them. Special attention should be given to the issues of electricity supply and telecommunications. Electricity supply should not be erratic and telephone lines should all be digitized.

4.11 SUMMARY

- Computers can be defined as a machine that is capable of accepting data, process it through an instruction or set of instructions and output the result.
- Computer is divided into four generations.

- Types of computers are digital, analogue, and hybrid computer.
- Computer is divided into Hardware and Software.
- Hardware is divided into input unit, processing unit output unit,
- Software is divided into systems software and application software.
- Library application package could be obtained through:

i. Off the shelf
ii. Adapting another application package.
iii. Drawing of program.

- Computer network is the interconnection of two or more independent computers and the peripherals.
- Types of networks are LAN and WAN
- Common structure or Topology of network are; Star, Bus, Ring, and topologies.
- Library automation is the application of computer to the library operations.
- Areas of computerization in libraries are:
- Administration, Acquisition unit, serials unit, circulation unit, technical services and Reference unit.
- There are some requirements such as: finance, infrastructure, hardware and software, maintenance, security, to be considered when computerizing any library.
- Computerization of library is faced with many problems in less developed countries. Find out these problems.

REFERENCES

1. Ayo, C.K. [1994]: Computer literacy: Operation and appreciation
2. French, C.S. [1990]: Computer Science 3rd ed.
3. LIBITECH NIG. LTD. [1996]: Technical library automation training manual.
4. Omotoso, R.O. [1998] Application of X-LIB in the RMRDC library. A paper Presented at the 1998 cataloguing and classification annual Seminar/Workshop held at Kwara State Library Services, Ilorin.
5. Sodipe R.O. [1991] Library Automation in Nigeria: Progress and Prospects. Paper presented at the workshop/seminar on library automation and Records management in the 90's, organized by BUSICON [and others] from 4-6 March, 1991 at Sheraton Hotel, Ikeja, Lagos, Nigeria.

CHAPTER FIVE

5.0 ARRANGEMENT OF LIBRARY MATERIALS

5.1 Catalogue and Classification
5.2 Things to note in arrangement of card catalogue.
5.3 Catalogue of Special collections
5.4 The Serials catalogue
5.5 Major classes of Library of Congress classification scheme
5.6 Subdivision of Subjects: Sciences
5.7 Appendix/Card catalogue
5.8 Exercises

5.1 CATALOGUE AND CLASSIFICATION

Books in a library are mainly grouped allowing to subject matter, so that those on the same subject can be together on the shelves. For the paper use of the library, it cannot be ignored. Going straight to the shelves has its advantages, but then one does not get to know very well the library's resources by doing that done. For one thing, books can be borrowed out or they can be misplaced or they could be in the bindery, on reserve or in the workroom etc. The function of the catalog is to identify all the items in a collection and to group items together. The basic things on a card catalogue are the call number, the authors name, the title and the date of publication: Further details are the publisher and place of publication, the edition number of pages or volumes, height of the books in centimeters, details of illustrations and some brief notes.

While in classification schedule, each class and subdivision within each class is given a symbol so that all the books in which a particular subject is treated can be given the same notation to indicate their relative position on the shelves.

5.2 THINGS TO NOTE IN ARRANGEMENT OF CARD CATALOGUE

(1) The usual arrangement in library catalogue is the word by word arrangement.

Word-by-Word Arrangement	**letter-by-letter arrangement**
New Amsterdam	New Amsterdam
New England	Newark

New wives for Old	New England
Newark	Newman
Newman	New wives of Old

(2) Within a particular author's name, the cards for books written by the author usually come first- arranged alphabetically by title followed by cards for book other prople have written about him.
(3) Newer editions comes before older ones
(4) Heading consisting of initial letters precede all other words beginning with the same letter e.g.

A.E.M.
A.I.U.
A.R.U.

(5) Initial article like a, an, the, are, disregarded
(6) Compounds names are filed as if they are individual words e.g.

Baal-Teshura, Jacob
Baale, Cornelius Henricus
Baden, Helge

5.3 CATALOGUE OF SPECIAL COLLECTIONS

In a library, there are often certain collection of material meant for special use that are not shelves with rest of the library's main collections. These usually have separate catalogues of the own. For example, maps, audio-visual materials, audio tapes. There may also be separate catalogue for government's document or publication received through deposit laws. One other kind of special catalogue one may find in a university library is known as "union catalogue" This gives information about the collections of other libraries related to the main university library, such department or faculty libraries and libraries of other campuses of same

university. This is particularly useful for people who do not normally use these branches libraries who may sometime need some of the material exclusively held there. Union catalogue can also serve groups of libraries within certain region or localities.

5.4 THE SERIALS CATALOGUE

Journals and other publications published serially are normally catalogue separately from books. The journals are entered by their titles in the catalogue. Since it is not possible on a small card to give details of every issue of a journal taken in the library, the extent of a library's holding of each title is given in form of an open entry of volumes, which starts with the particular issue with which the library begins its accquisition, followed by a dash (-) to show that the librlary continues to acquires subsequent volumes as they are issued.

5.5 MAJOR CLASSES OF LIBRARY OF CONGRESS CLASSIFICATION SCHEME

LETTERS	DISCIPLINE
A	General Works
B-BJ	Philosophy, Psychology
BL-BX	Religion
C	Auxiliary Sequence of History
D	History; General & Old World
E-F	History; America
G	Geography; Anthropology; Recreation
H	Social Science
J	Political Science
K	Law
L	Education
M	Music

N	Fine Arts, Architecture
P	Language & Literature
Q	Science
R	Medicine
S	Agriculture
T	Technology
U	Military Science
V	Naval Science
Z	Bibliography; Library Science

ACCESSION NUMBERS

Materials acquired by the library have to be organized in order to make them accessible to the readers and also to help the library to know its holdings or collection or stock (in volumes) at any particular point in time.

The numbers given to new books on arrival into the library is known as accession numbers.

Accession number helps to identify each book in the library apart from using the title or author(s) of the textbooks, and to know which particular textbook is missing or has been borrowed out of the library.

CLASSIFICATION

Alphabet	**Subject**
Q	Science
QA	Mathematics
QB	Astronomy
QC	Physics
QD	Chemistry
QE	Geology
QH	Natural history
QK	Botany
QL	Zoology

QM	Human anatomy
QP	Physiology
QR	Microbiology

Some subdivision under mathematics class QA

QA 76 – 76.8	-	Computer Science
QA 101 – 141.8	-	Arithmetic
QA 150 – 271	-	Algebra

Some subdivisions under Algebra QA 150-271

QA 218	-	Numerical solutions
QA 247	-	Algebraic field Algebraic Numbers
QA 247.3	-	Modular fields
QA 247.35	-	Modular Arithmetic

MEDICINE

Alphabet	Subject
R	Medicine(General)
RA	Public aspect of Medicine
RB	Pathology
RC	Internal Medicine
RD	Surgery
RE	Opthalmology
RF	Otorhinolaryngology
RJ	Pediatrics
RK	Dentistry
RL	Dermatology
RM	Therapeutics Pharmacology
RS	Pharmacy
RT	Nursing
RV	Botany, Thomsonian

TECHNOLOGY

Alphabet	Subject
T	Technology (General)
TA	Civil Engineering
TC	Hydraulic Engineerin
TD	Environmental
TE	Highway Engineering
TF	Railroad Engineering
TG	Bridge Engineering
TJ	Mechanical Engineering
TK	Electrical/Electronics Engineering
TL	Motor Vehicle
TN	Mining Engineering
TP	Chemical Engineering
TR	Photography
TS	Manufactures
TT	Handicrafts Arts & Crafts
TX	Home Economics & Eclectic Medicine

Some subdivisions under Algebra QA 150-271

QA 218	-	Numerical solutions
QA 247	-	Algebraic field Algebraic Numbers
QA 247.3	-	Modular fields
QA 247.35	-	Modular Arithmetic

MEDICINE

Alphabet	Subject
R	Medicine(General)
RA	Public aspect of Medicine
RB	Pathology
RC	Internal Medicine
RD	Surgery
RE	Opthalmology
RF	Otorhinolaryngology
RJ	Pediatrics
RK	Dentistry
RL	Dermatology
RM	Therapeutics Pharmacology
RS	Pharmacy
RT	Nursing
RV	Botany, Thomsonian
RX	Homeophathy

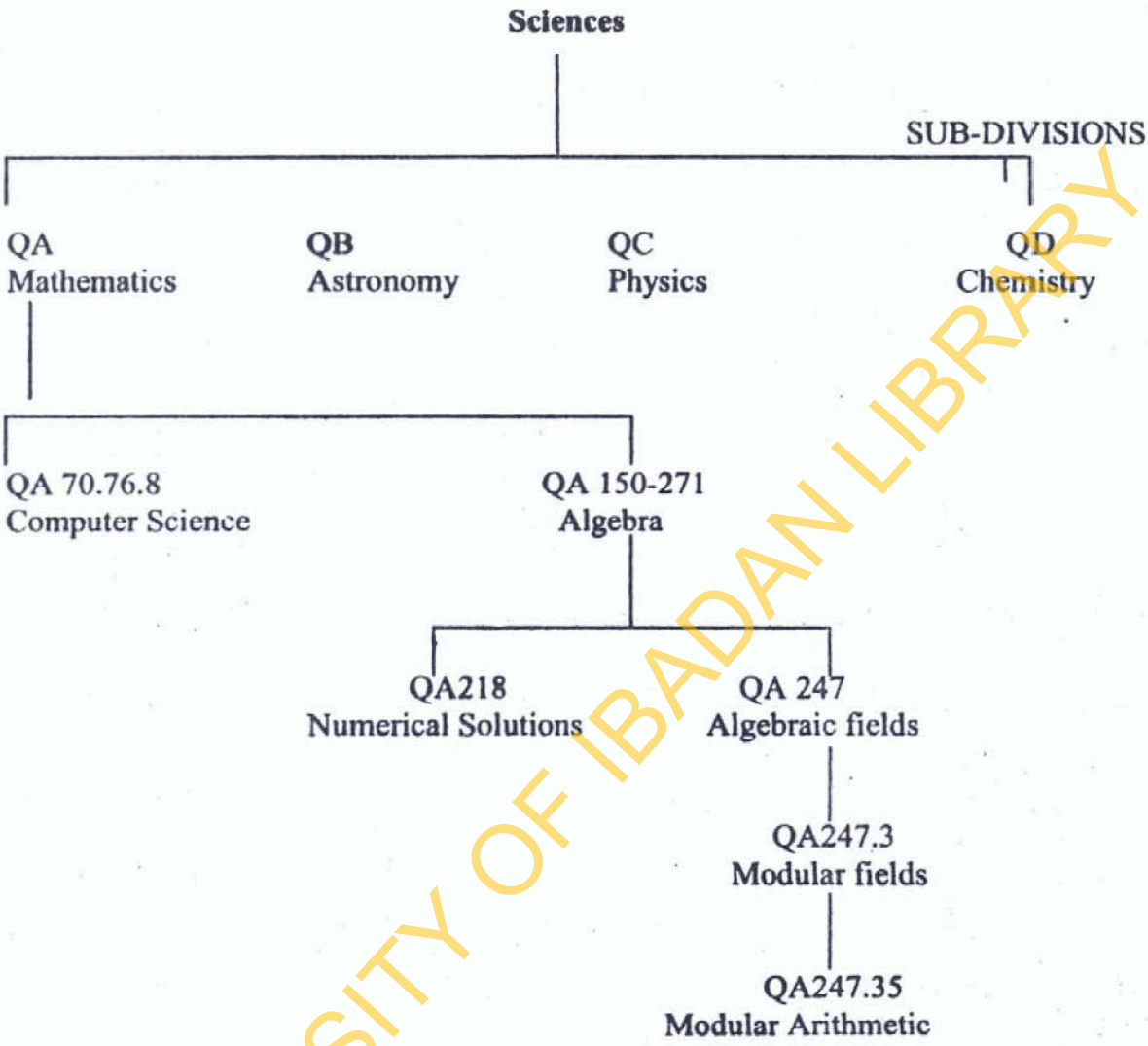
TECHNOLOGY

Alphabet	Subject
T	Technology (General)
TA	Civil Engineering
TC	Hydraulic Engineering
TD	Environmental
TE	Highway Engineering
TF	Railroad Engineering
TG	Bridge Engineering
TJ	Mechanical Engineering
TK	Electrical/Electronics Engineering
TL	Motor Vehicle
TN	Mining Engineering
TP	Chemical Engineering
TR	Photography
TS	Manufactures
TT	Handicrafts Arts & Crafts
TX	Home Economics & Eclectic Medicine

AGRICULTURE

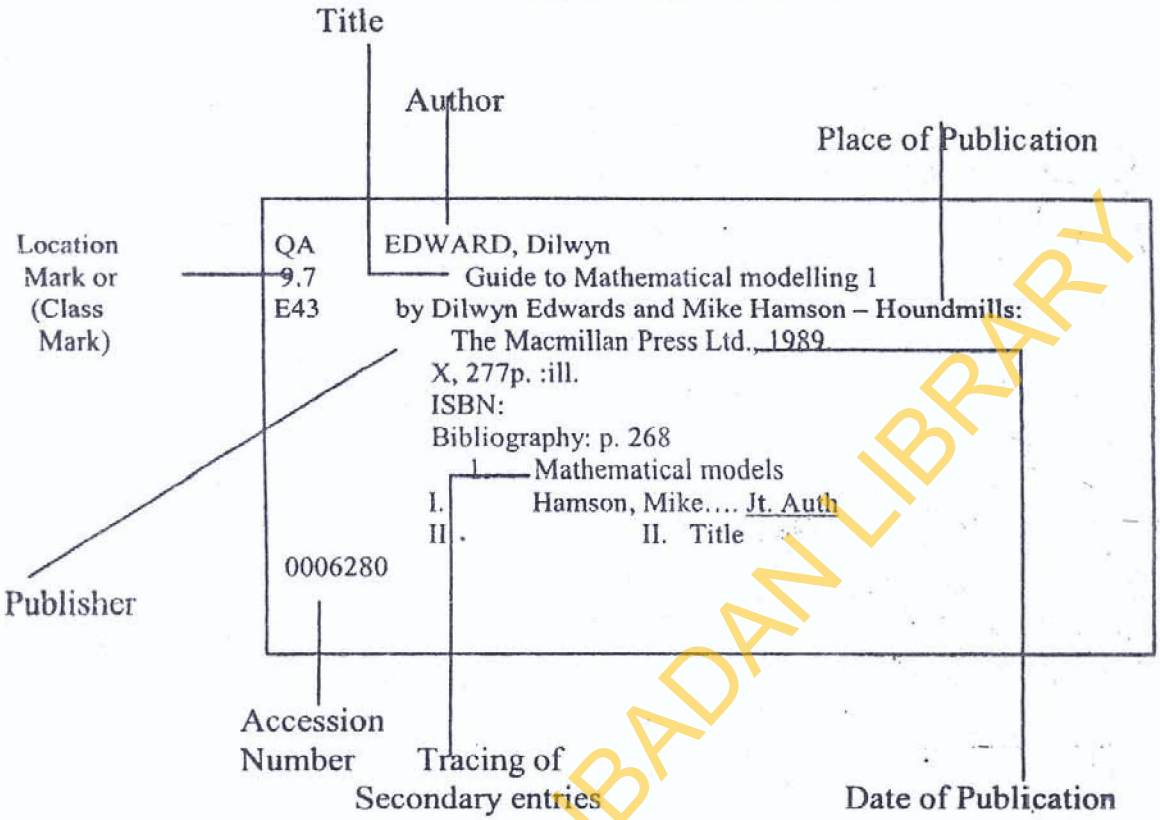
S	Agriculture (General)
SB	Plant Culture and Horticulture
SD	Forestry
SF	Animal Culture
SH	Fish Culture
SK	Hunting Sports

5.6 SUBDIVISION OF SUBJECTS: SCIENCES



5.7 APPENDIX

CARD CATALOGUE



Title Entry: periodicals (Serials Catalogue)

QD
1
.C42

CHEMICAL Products
v.2, 1938-
London, John Trundel
Monthly

Supercedes Chemical Products
And Chemical News

Library has: v.25-v.26
1962-1963

0005213

Entry for Govt. Publication

AZ
196
.C35

Entry for Govt. Publication (Documents)

NIGERIA. Information Ministry
Of Challenge of Unity
Lagos, 1967

1. Nigeria-History-Civil War
1967-1970
I. Title

0008795

Joint author card

QA
9.7
E43

Hamson, Mike.....jt. auth

EDWARDS, Dilwyn
Guide to mathematical modelling/
By Dilwyn Edwards and Mike Hamson
Hounmills: The Macmillan Press Ltd., 1989

X, 277p. :ill
Bibliography; p.268
1. Mathematical models
I. Hamson, Mike, ...jt. auth.
II. Title

0006280

Title Card

QA 9.7 .E43

Guide to mathematical modelling

EDWARDS, Dilwyn

Guide to mathematical modelling/
by Dilwyn Edwards and Mike Hamson
- Hounmills: The Macmillan Press Ltd., 1989

X, 277p. :ill
Bibliography; p.268
2. Mathematical models
I. Hamson, Mike, ….jt. auth.
II. Title

0006280

Subject Card

QA 9.7 .E43

MATHEMATICAL MODELS

EDWARDS, Dilwyn

Guide to mathematical modelling/
By Dilwyn Edwards and Mike Hamson
- Hounmills: The Macmillan Press Ltd., 1989
X, 277p. :ill
Bibliography; p.268
1.Mathematical models
I.Hamson, Mike, ….jt. auth.
II.Title

0006280

Title Entry: Monographs (Books)

SB	PLANT PARASITIC NEMATODES IN
250	Subtropical and Tropical Agriculture/ed
.P5	By Michael Luc,
	Richard Sikora and John
	Bridge.-UK: CADB International,
	1990
	xvii, 629p; :ill
	Includes bibliographical references
	ISBN: 0-85190-630-7E
	1.Nematodes diseases of plant
	I. Luc, Michael jt. ed.
	II. Sikora, Richard A. jt. ed
	III. Bridge, John ..jt. ed
0006649	
0006650	

5.8 EXERCISES

Catalogue Cards and General Arrangement of Books of Shelves

BU
6 JOURNAL of Applied Mechanics
..J (American Society of Mechanical Engineers)
New York.

Vol 1 (1933)

1. What type of catalogue card is this?

   .....

2. Compare the entries on this card with the main author Card (page). What are the differences?

   .....

   .....

   .....

3. Label the following cards with the appropriate information (e.g. accession number)

HD IKE Adebimpe
248 Economic development
.15 of Nigeria, 1950-64; a bibliography.
Nsukka: University of Nigeria, 1968

Ix 29p: 24cm
ISBN: 6749
1. Economic development
I. Title

(b)

QC
176
.K5
1986

KITEL, Charles
Introduction to Solid Waste Physics-6ed-
New York.- John Wiley, 1986.
646; ill
x, ISBN; 0-471-874774
1. Solids
I.Title

047841

Z
138
.A5

ADETOYE, T.O.
Music made simple- a bibliography.-
Ibadan: Fountan Books, 2000.

iv, 401; :ill
ISBN 04-98210
I.Bibliomusic – Bibliography
I. Title

4. Rewrite the following class marks (call numbers) in order that they should appear on the shelves

TX 45 .D4	SB 250 .B3	TS 4501 .S25	S 512 ..C6	SD 421 .D35
SB 319 .A51T3	TA 321 .D33	TA 81 .E5	SK 750 .A3L4	T 8 .F3
R 834 .I6C6	QA 348 .E5C68	RA 271 R71	QA 117 .B4	QM 23.2 .G34

Answer

BIBLIOGRAPHY

Adeoti-Adekeye, N.B. (1997): The need for user education; School Libraries, Library Review Vol. 46, No. 3, pp 586-592.

Ayo, C.K. (1994): Computer Literacy, Operation and Appreciation

Chukwuma, Helen, & Otangburuagu, Emeka (ed) (1977); English for Academic Purpose. Onitsha; Africana FEP Publishers Ltd. Pp 14-16

The Encyclopeadia Americana (1990) International ed., Danbury Grolier, Inc. Encyclopaedia of Association

Fjallbrant, N and Stevenson, M. (1978): User Education in Libraries, London; Clive Bingley

French, C.S. (1990): Computer Science 3rd ed.,

Harring, J.E. (1978): User Education in Schools. The School Librarian; Vol. 28, No. 4, pp. 341-342.

LIBITECH NIG. LTD (1996): Technical library automation training manual The New Encyclopedia Britannica (1990) Vol. 22. Chicago: Encyclopaedia Britannica Inc. pp 968-984.

Omotoso, R.O. (1988): Application of X-LIB in the RMRD Library. A paper presented at the 1998 cataloguing and classification annual seminar/workshop held at Kwara State Library Services, Ilorin

The Oxford English Dictionary (1989) 2nd ed. Oxford; Clarendon Press.

Ray, Colin (1990). Running a School Library: a handbook for Teacher-Librarians, London; Macmillan Education Ltd., pp. 1-100.

Sodipe, R.O. (1991): Library Automation in Nigeria: Progress and Prospects. Paper presented at the workshop/seminar on library automation and records management in the 90's organized by BUSICON and others) from 4-6 March, 1991 at Sheraton Hotel, Ikeja, Lagos.

Wali, M.H. (1978): The role of School Libraries: Nigerian School Library Journal, Vol. 1, No. 2 p.35