Indira Gandhi National Open University (IGNOU)

Bachelor of Library and Information Science (BLIS)

STUDY MATERIALS

Course code: BLI-228

Information Products and Services

JATINDER SINGH
BLIS (JULY-2018)

www.jatinderjyoti.in
jatinderjyoti84@gmail.com
fb/insta: jatinderjyoti.raina

Block

1

CONVENTIONAL PRODUCTS AND SERVICES

Programme Design Committee

Prof. Uma Kanjilal (Chairperson)
Faculty of LIS, SOSS, IGNOU

Prof. B.K.Sen, Retired Scientist
NISCAIR, New Delhi

Prof. K.S. Raghavan, DRTC
Indian Statistical Institute, Bangalore

Prof. Krishan Kumar, Retired Professor
Dept. of LIS, University of Delhi, Delhi

Prof. M.M. Kashyap, Retired Professor
Dept. of LIS, University of Delhi, Delhi

Prof. R.Satyanarayana
Retired Professor, Faculty of LIS, SOSS
IGNOU

Dr. R. Sevukan
(Former Faculty Member) Faculty of LIS
SOSS, IGNOU

Prof. S.B. Ghosh, Retired Professor
Faculty of LIS, SOSS, IGNOU

Prof. T. Viswanathan
Retired Director, NISCAIR, New Delhi

Dr. Zuchamo Yanthan
Faculty of LIS, SOSS, IGNOU

Conveners:

Dr. Jaideep Sharma
Faculty of LIS, SOSS, IGNOU

Prof. Neena Talwar Kanungo
Faculty of LIS, SOSS, IGNOU

Programme Coordinators	Course Coordinator
Prof. Jaideep Sharma and Prof. Neena Talwar Kanungo	Prof. Neena Talwar Kanungo

Course Preparation Team

Unit No(s)	Unit Writer(s)	Course Editor
1 to 4	Prof. B. K. Sen	Prof. Neena Talwar Kanungo

Language Editor(s)

Unit No.(s)	Language Editor(s)
1&2	Dr. Nandini Sahu, Associate Prof. SOH, IGNOU
3&4	Dr. Malathy A., Astt. Prof. SOH, IGNOU

Print Production	Secretarial Assistance	Cover Design
Mr. Manjit Singh Section Officer (Pub.) SOSS, IGNOU, New Delhi	Ms. Sunita Soni SOSS, IGNOU	Ms. Ruchi Sethi Web Designer E Gyankosh, IGNOU

Further information on Indira Gandhi National Open University courses may be obtained from the University's office at Maidan Garhi. New Delhi-110 068 or visit University's web site http://www.ignou.ac.in

UNIT 1 LITERATURE SEARCH AND BIBLIOGRAPHIC SERVICES

Structure

1.0 OBJECTIVES

After reading this Unit, you will be able to:

- explain the meaning of the word 'literature' in this context;

- elaborate the term 'literature search';

- describe the search technique involving subject approach and author approach;

- discuss about the bibliographic services especially ad hoc bibliography; and

- compile a bibliography following subject approach as well as author approach.

1.1 INTRODUCTION

Since our childhood days we have heard the term 'literature' and learnt that literature comprises of prose, poetry, drama, fiction, etc. In this context, the meaning of literature is different. By the term 'literature' we mean here the whole body of writings on all subjects, covering all types of documents, produced in all languages from antiquity to the present by people from all parts of the world. The definition is undeniably awe-inspiring and the amount of literature produced so far is mind-boggling. You must know that the production of literature has not stopped. It is continuing at an ever increasing rate and cumulating.

Take for example, *Chemical Abstracts.* It is an abstracting periodical started in 1907. As on date, its database called *CA Plus* has more than 34 million records and is increasing at the rate of 3,000 records per day [Chemical Abstracts Service].

In the case of chemistry, the situation may look alarming. In many other areas, the growth rate of literature is even faster than chemistry. Of course, the growth rate of literature is not so alarming in social sciences, arts and humanities. On the whole, the quantum of literature being generated in all fields everyday is huge. This literature is continuously cumulating making literature search more and more challenging. Let us now dwell on 'literature search'.

1.2 LITERATURE SEARCH

Literature search simply means searching the literature related to a particular topic. This literature is available in varied forms such as journal articles, books, theses, patents, standards, etc. Searching journal articles related to a particular topic by going through all relevant journals is an impossible task. Suppose, you intend to search journal articles on library classification. There are numerous library science journals in the world being published in different languages. Because of language barrier, you will not be able to read the articles published in all journals, neither will you get all the journals in one place. The question obviously arises what is the solution.

Researchers in the world faced this problem long ago. As a result solutions have also been found out in the form of abstracting and indexing periodicals as well as reviewing periodicals. Most of these sources are now available in electronic form as well which can be searched online with great speed.

For literature search you are to follow a well-defined path. Otherwise you may simply wasting your time and energy achieving practically nothing. To avoid such a situation you are to follow the well-established search technique.

1.2.1 Search Technique

For literature search there are two approaches: subject and author. We shall first discuss the subject approach which is normally followed for literature search. The author approach will be dealt with at the end. This approach though comparatively less used, at times yields very good results.

1.2.2 Subject Approach

In the following sub-sections we shall discuss the technique involved in subject approach step by step.

Step 1   Request for literature search

It may come in person or in the form of a written communication like an e-mail, SMS, a letter, a telephone call, etc. It is to be checked from the query whether the **purpose** and **scope** are clearly mentioned. Depending on the purpose, the search will take its course. If the purpose is to prepare a lecture, the search will be simple. A few textbooks on the topic may suffice. On the other hand if the purpose is to conduct research, a thorough literature search will have to be undertaken. Here we are considering literature search for conducting research.

Scope is another very important factor. It takes into account the *topic* in clear cut terms, and the coverage in terms of the *period*, the *geographical area*, the *languages,* and the *forms of documents*. Let us discuss these points one by one.

Topic – Suppose from the query, the topic appears to be 'airways'. Just from the term you should not jump at the conclusion that the topic pertains to aviation. It may pertain to medicine as well, since in medicine 'airways' means 'the passage by which air reaches the lungs.' At times you may receive request for such topics as 'chimaera' or '*Ziziphus ziziphus*' the meaning of which is not known to you. In such cases you need to consult a dictionary, an encyclopaedia or any other standard reference source that may give you the information. You may note that for Latin names like *Ziziphus ziziphus,* general dictionaries may not be of much use. You should take the help of the Internet or an expert.

You must be aware of the term called **reference interview** denoting interviewing the information seeker. You may interview the information seeker if s/he is available. If the information seeker is a high ranking official, say, the vice-chancellor of a university or the director of a laboratory, it may not be easy for you to approach her/him for interviewing. In such a case, it is better to contact the person through her/his personal secretary or by writing a letter.

You need to take care of **synonyms** as well as **related terms**. Many terms especially chemical compounds have more than one synonym. For example, the drug called 'diazepam' has a number of brand names like calmpose, paxum and valium. They are also known as tranquilizers or sleeping pills. You may find literature using any of these terms.

Another important point that is to be taken into account is the date of origination of the topic. If we take a topic like supergravity that originated in 1975, there is no use searching for literature prior to this date.

In short, we may say that, for literature search we need to take into account not only the term given by the researcher, but also the synonyms, related terms as well as the date of origination of the topic.

Period – The topic for literature search may be dating back to one hundred years or more. In such a case you will have to ask the researcher as to the time period that should be covered. In certain cases even the researcher may not have a clear idea as to the volume of literature available on the subject. Take for example, **pesticide poisoning**. The sources you may consult are *Pubmed*, *Web of Science* and the like that might indicate that there is huge amount of literature on the topic. You inform the researcher about this. The researcher may restrict the time period to the last 15 years. That will reduce your search a great deal. For historical topics the time period covered is usually long. For example, if someone's PhD topic is on "Development of School Libraries in Orissa in Post-independent India". Here the time period starts right from 1947 onwards. For a subject of recent origin like 'retroconversion of library catalogues' the time period will be quite short. In some topic the period is distinct. Examples: Development of programming languages in 21st century; Tamil poetry in independent India; etc.

Geographical area – In all literature search geographical area is not involved. If you are conducting literature search on 'work done on supergravity since 2001', you will have to search world literature. On the other hand in the literature search on 'flora of Himachal Pradesh' the geographical area is distinct. In certain cases, the geographical area may not be explicit in the query. Take for example, the topic 'theft of books in rural libraries – a study'. In this case the researcher might

have in her/his mind a particular state or a district of India, and this will be clarified on enquiry.

Languages – Literature on any topic is produced in many languages of the world. Abstracting and indexing services of the world cover literature from numerous languages. You may note that *Chemical Abstracts* covers documents in 50 languages of the world. In literature search, the question that crops up is whether to cover literature in all languages of the world, or only in a few languages or only in one language, say English. In this case, the reply is to be sought from the researcher. If the researcher is interested in literature published in various languages of the world, then the literature can be easily gleaned as abstracting and indexing services of the world make sincere efforts to cover literature from various languages.

Forms of documents – If you go through the list of references given at the end of the learned publications, you will notice that there are citations pertaining to journal articles, monographs, reference books, conference documents, patents, standards, theses, etc. This clearly indicates that researchers are interested in all sorts of documents that are relevant to their research area. From abstracting and indexing periodicals devoted to the subject, you may get various forms of documents containing the information. At times, you are also to examine abstracting and indexing services devoted to various forms of documents such as theses and patents.

In **Step 1**, we have talked about the topic and the scope. Once we have clear idea about the topic and its scope, we can take the next step.

Step 2 – In most cases, the objective of literature search is to compile a **bibliography** for a researcher. If that is also your objective, then you should follow the following path.

There are numerous published bibliographies on various subjects. To find out whether or not there is a published bibliography on the topic, you are to examine the following sources:

i)   Besterman, Theodore. *A World Bibliography of Bibliographies and of Bibliographical Catalogues, Calendars, Abstracts, Digests, Indexes and the like.* 4th ed. 5 vols. Geneva: Societas Bibliographica, 1965-1967. Print.

ii)   *Bibliographic Index: Cumulative Bibliography of Bibliographies, 1937-.* New York: Wilson, 1938. Print.

iii) *Index Bibliographicus.* 4th ed. The Hague: Federation Internationale de Documentation, 1959. Print.

iv)   Kalia, D. R., and M. K. Jain. *Bibliography of Bibliographies on India.* Delhi: Concept, 1975. Print.

You may observe that the first source is dated 1967, the third source 1959, and the 4th source 1975. Moreover, the scope of the fourth source is restricted to India only. Hence, these sources will not contain any bibliography on the topics that originated after these dates. Therefore, for recent topics, it is wise to consult *Bibliographic Index.* For pre-1975 bibliographies sources mentioned in points (i), (iii), and (iv) will be of great help. Apart from these four sources there are

other sources as well which can be found out by consulting the World Wide Web, OCLC, DELNET, etc.

Now you are facing two possibilities.

Possibility 1 - Consulting the sources you may locate one or more bibliographies. You can get those, make copies and supply it to the researcher. The bibliography you have located may not be up-to-date. Suppose the bibliography has covered the literature up to 1980. In this case you need to update the bibliography up to recent times. For this you must follow the procedure described under *Possibility 2*.

Possibility 2 – In the aforesaid sources you have failed to locate any bibliography. Now, you need to go through secondary sources pertaining to the subject. To find out secondary sources on any particular topic you must consult the following:

i)   *Walford's Guide to Reference Materials.* Ed. A. J. Walford, et al. 8th ed. Vol. 1 – Science and Technology; Vol. 2 – Social and Historical Sciences, Philosophy and Religion; Vol. 3 Generalia, Language and Literature, the Arts. London: Library Association, 2000. Print.

ii) *Abstracting Services*. 2nd ed. Vol. 1- Science, Technology, Medicine, Agriculture: Vol. 2 – Social Sciences, Humanities. The Hague: International Federation for Documentation, 1969. Print.

Apart from these two, there are other sources as well. For example, *Ulrich's Periodicals Directory* 2012 (50th ed. N.J.: ProQuest, 2011) also lists secondary periodicals under various subjects. It is not necessary for you to go for exactly the edition mentioned above. If you find latest or previous editions that will also serve your purpose to a great extent.

After you have gone through these sources, any one of the situations as stated below may arise.

i)   Secondary periodicals are available exactly on the topic.

ii) Secondary periodicals are available on the subject as well as on the broader subject.

iii) No secondary periodical is available on the subject, but available on a broader subject.

iv) No secondary periodical is available on the subject, not even on the broader subject.

Let us take the situations one by one.

Situation (i) – Of the secondary periodicals available on the topic, if there are reviewing periodicals, they should be consulted first, since each article in a reviewing periodical is accompanied with a long bibliography which may be considered more or less an exhaustive bibliography on the topic belonging to a particular period. If a recently published review article pertaining to the query is available, the problem of literature search is solved to a great extent. If the review article is old, the bibliography accompanying the review article may be supplemented by picking up relevant references from the abstracting and indexing periodicals. It is to be noted that all secondary periodicals available on the subject are to be consulted while compiling a comprehensive bibliography.

Situation (ii) – Suppose, the field of search is helminthology. There is an abstracting periodical called *Helminthological Abstracts* [Wallingford, Oxon: CAB International Information Services, 1990-.] which is directly devoted to the topic of search. There is *Pubmed* [Bethesda, MD: National Library of Medicine, 1966-.], an electronic secondary source devoted to medicine, and also *Biological Abstracts* [Philadelphia: Biosciences Information Service of Biological Abstracts, 1926-.]. For literature search on the topic *Helminthological Abstracts* is to be searched first, followed by the other two since no service is totally comprehensive. Hence, what is missed by one is likely to be covered by the others.

Situation (iii) – Let us take the case of holography. It is 'a method of producing a three-dimensional image of an object by recording on a photographic plate or film the pattern of interference' (holography). The subject corresponds both to physics and photography. Hence, secondary services on physics and photography are to be consulted to compile the bibliography. It is to be noted that holography was discovered by the Hungarian physicist Dennis Gabor in 1947. Hence, the search will have to be carried out from 1947 onwards. For this purpose we can search *Physics Abstracts* [London: Institution of Electrical Engineers] and *Photographic Abstracts* [London: Royal Photographic Society of Great Britain] up to 1987 as the publication ceased in 1987, and for the later period *Imaging Abstracts*. [Elmford, N.Y.: Pergamon Press, 1988-.].

Situation (iv) – Take the subject UFO. It is the short from of 'unidentified flying objects'. If you get a request to compile a bibliography on the topic, you may get little help from abstracting services. *International Aerospace Abstracts* [N.Y.: Technical Information Service, American Institute of Aeronautics and Astronautics, 1963-.] may not be of much help as research articles on the topic are few. If you are connected to the Internet, you may search Google Scholar, Web of Science, and SCOPUS. You may note that for searching Web of Science and SCOPUS, you will have to pay for it. If you have the facility to consult the printed version of *Science Citation Index* [N.Y.: Thomson Reuters, 1963-.] in a library then you can consult it free of charge. On UFO you find mostly newspaper reports and few articles in newspapers and journals. Hence, searches in indexes to newspapers like *Index to the Times of India* [Mumbai: Times of India, 1973-.] and periodicals like *Readers' Guide to Periodical Literature* [Minneapolis: Wilson, 1905-.] are likely to give you better results.

At times you may get request to compile a bibliography on such a topic that renders you clueless. In such a situation you should try to consult Google Scholar (free of charge), Web of Science (on payment basis), and SCOPUS (on payment basis). If you have facilities to consult printed/CD-ROM version of citation indexes, i.e. *Science Citation Index, Social Science Citation Index, and Arts and Humanities Citation Index*, you should consult the relevant index. There is every chance that your searches will yield positive results.

Multifocal topics - Often there are requests for bibliographies for such topics which are multifocal, e.g. Pesticide poisoning of birds. Here pesticide pertains to chemistry, poisoning pertains to toxicology, and birds pertain to zoology. For a comprehensive bibliography on the topic you are to consult *Chemical Abstracts* for pesticides, *Pubmed* for toxicology, and *Biological Abstracts* for birds. For birds you may also consult *Zoological Record* brought out by Thompson Reuters. If possible, you should also consult Web of Science, SCOPUS, and Google

Scholar. It is expected that in every source you will find something new and relevant.

The bibliography that is compiled using secondary sources is always backdated by some months or years. The abstract which you are seeing in the latest issue of an abstracting periodical today might belong to an article published months ago or even years ago. There are some abstracting periodicals which are running very late. Therefore, you need to go through the literature that have been published during the last one year. For that you are to take Step 3.

Step 3 – Search for the latest literature

In Step 2 the searches were restricted to secondary sources. In this particular step the search will be restricted mainly to primary sources, i.e. primary periodicals, conference proceedings, festschrift volumes, theses, patents, standards and specifications, research monographs, encyclopaedias and other reference tools. It is to be noted that primary sources are scattered in different libraries all over the world. Without the Internet it is almost impossible to trace them. For every item being discussed in Step 2, you need to take the help of the Internet. Now, let us discuss all these items one by one.

Primary periodicals – In this case, the first job is to identify the primary periodicals which you are to search physically or through the Internet. The best way to identify the primary periodicals will be as follows:

While conducting literature search you have to record the bibliographical details of every item in 5" X 3" cards following a standard format. These cards are considered to be of standard size and are easy to handle. If you have a bibliography of 100 plus items, it will be considered a good sample to undertake the following activity. Recording of the bibliographical details of the documents on cards is a manual method. It is being suggested here because it will be very easy for every one to follow this method. The information can be recorded in a computer also, in that case you are suppose to create a database to obtain various items of information.

Arrange these cards according to the forms of the documents. If the bibliography pertains to a science subject, it is most likely that 70 to 80 per cent of the cards will belong to periodicals. In the case of humanities or social sciences about half of the cards may pertain to books and the rest to other forms of documents.

Suppose you have 75 per cent cards pertaining to periodicals. Now, arrange these cards according to the titles of periodicals. You will be surprised to see that about 60 to 70 per cent cards belong to a few periodical titles only. These are the periodicals whose latest issues are to be searched physically in the library or in the Web to find out the latest articles on the topic. The periodicals which have accounted for only one or two articles may not be easy to search because they will in most cases belong to alien fields.

A glance through the remaining cards will tell you which other forms of documents have figured in the cards. You need to search those forms of documents which have appeared recently.

Conference proceedings – Every year innumerable conferences are taking place on various topics throughout the world. Even in our country about a dozen

conferences are held in a year in the field of library and information science alone. Conference proceedings include the papers (in some cases only abstracts) accepted for presentation. Among these papers quite a number of original papers also exist. Hence, the conference proceedings which are received by libraries on the given topic should also be searched for the latest literature. They can also be searched in the Web. To find out the availibility of conference proceedings of the given subject in any library, you need to search DELNET, OCLC and similar online catalogues.

Festschrift volumes – To honour well-known professionals living or dead festschrift volumes are brought out. Some of these volumes are devoted to a particular subject, others contain articles on diverse topics. The festschrift volume brought out in honour of A. K. Dasgupta was devoted to national bibliographical control. [Raju, A. A. N. and L.S. Ramaiah, eds. *National Bibliographical Control: Problems and Perspectives: Essays for A. K. Dasgupta.* New Delhi: Allied, 2003. Print.]. The festschrift volume brought out in honour of S. Parthasarathy was on library and information systems. [Raghavan, K. S. and K.N. Prasad, eds. *Library and Information Systems from Alexandrian Heritage to Social Networking: Essays in Honour of S. Parthsarathy*. New Delhi: Ess Ess Publications, 2009. Print.]

These volumes include many articles (from around 20 articles to more than 100 articles). The articles are of varied quality which include research and learned articles. For locating these volumes you need to consult DELNET or OCLC catalogues or the like.

Research reports – A huge number of research reports are brought out every year by various research organisations especially those engaged in aerospace, nuclear and defence research. These reports are also primary sources of information. In our country Bhabha Atomic Research Centre and a number of other agencies bring out research reports. The problem with research report is that there is no global bibliographical control of these reports. Individual countries like US have some control. You may search the Web and get information about some reports. For research reports from US, you may search NTIS database http://www.ntis.gov/search/index-aspx.

Patents – All developed and many developing countries bring out patents. These countries usually have got only one patent office, therefore, there is no problem with bibliographical control. The number of patent applications filed in a year is mind boggling. According to *WIPO Statistics Database*, June 2010 there were 5.94 million pending patent applications in the world in 2008. There are numerous abstracting and indexing services devoted to patents. For locating latest patents on a topic you should examine *Derwent World Patents Index* [Philadelphia: Thompson Reuters] which is comprehensive, and other important patent databases. World Intellectual Property Organization (WIPO) also provides information services on patents from all over the world.

Standards and specifications – Unlike patents, the number of standards produced in a year is small. Most countries have standards organisations that bring out standards. Contacting them or consulting their websites, information about latest standards can be obtained. In India, Bureau of Indian Standards bring out national standards.

Theses – Theses are also primary sources of information. *University News,* a weekly news journal brought out by Association of Indian Universities, New Delhi may be consulted for information on latest theses produced from India. The journal has a separate section where latest theses produced from India are listed.

Monographs and treatises – Often these publications also contain primary information. For locating latest monographs and treatise, you may consult the Web with the keywords 'monograph' and 'treatise'.

Accession lists – These lists are published by various libraries which give information about latest monographs, treatises, research reports, standards and specifications, theses, etc. procured by the library.

Self Check Exercise

Note: i)   Write your answers in the space given below.

   ii)   Check your answers with the answer given at the end of this Unit.

1)   How will you ascertain the 'topic' of literature search from the query avoiding ambiguity?

....

....

....

....

....

....

2)   Enumerate the sources you will consult to find out the latest literature.

....

....

....

....

....

....

3)   What are multifocal topics?

....

....

....

....

....

....

1.2.3 Author Approach

Though not very popular, author approach is also an effective approach for the compilation of a bibliography. In this case, the technique of compilation of a bibliography is as follows:

i) Find out the name of an author who contributes papers on the subject to which your topic belongs. It will be very good if the author is a prolific writer. If you cannot find a name, then ask the researcher. S/he will be able to supply you one or more names. You also can search the Internet with the name and the topic. A number of websites will be in view with the same name. From that you are to choose that one which tallies with the author's name and the topic.

ii) Now, find a paper contributed by the author on the topic.

iii) Get the copy of the paper.

iv) Check the references/bibliography given in the paper. In all probability most of the articles cited in the paper will pertain to the topic you are interested in.

v) Prepare entries for all the relevant items in 5"x3" cards.

vi) In most of the entries you will find the name of the authors. It is likely that most of the authors figuring in the entries pertain to the field to which your topic belongs.

vii) Now find out the papers by these authors. References appended to all these papers in most cases will belong to your topic.

viii) Prepare entries of all the relevant papers, and merge them with the earlier entries. You will find that in many cases entries are duplicates.

ix) Remove the duplicate entries.

x) In these entries you will find some new authors. Follow the steps (vii) to (ix) for the new authors.

xi) Continue the process till no new author is found.

xii) Your bibliography will be highly relevant and cover most of the relevant items.

Let us take a concrete example to demonstrate the compilation process.

Step 1 – Suppose, you have received a request from a researcher to compile a bibliography on webometrics. This is a comparatively new field and the term connotes metric study of the Web and its components. Suppose, you know that R. Jeyshankar has published a paper on webometrics. Searching the Web with **R Jeyshankar Webometrics** you will find the bibliographical details of the article as Jeyshankar, R., and B. Ramesh Babu. "Websites of Universities in Tamil Nadu: A Webometric Study". *Annals of Library and Information Studies* 56(2009): 63-68.Print. And you will also find the following articles under the heading **References.** The entries here have been reproduced with minimal changes.

1) Paisley W, The future of bibliometrics. In: Borgman (CI). *Scholarly communication and bibliometrics.* (Sage: London), 1990, p.281-299.

2) Rousseau R, Sitations: An exploratory study, *Cybermetric*, 1(1) 1997 Available at :http://www.cindoc.csic.es/cybermetrics/articles/vli/lpl.html (2008, Nov 28).

3) Almind T C and Ingwersen P, Informetric Analysis on the World Wide Web: Methodological Approaches to "Webometrics', *Journal of Documentation*, 53(4) (1997) 404-426.

4) Rodriguez I and Gairin J M, 'Volarando el impacto de la informacion en Internet: Alta-Vista, et "Citation Index" de la Red', *Revista Espanola de Documentacion Scientifica*, 20(2) (1997) 175-181.

5) Larson R R, 'Bibliometrics of the World Wide Web: an exploratory analysis of the intellectual structure of cyberspace'. In: Hardin, Steve (ed.). *Global complexity: information, chaos, and control. Proceedings of the 58th ASIS Annual meeting, Baltimore, Maryland.* Medford, NJ: Learned Information Inc.ASIS. (1996), 71-78.

6) Bjorneborne L and Ingwersen P, Toward a Basic Framework for Webometrics, *Journal of the American Society for Information Science and Technology*, 55(4) (2004) 1216-1227.

7) Cui L, Rating health Web sites using the principles of citation analysis: A bibliometric approach, *Journal of Medical Internet Research,* 1(1) 1999 Available at :http://www.jmir.org/1999/I/e4/index.html (Accessed on 30 Nov 2008)

8) Vreeland R C, Law libraries in hyperspace: A citation analysis of World Wide Web, *Law Library Journal*, 92(1) (2000) 9-25.

9) Thelwall M, Conceptualizing documentation on the web: an evaluation of different heuristic–based models for counting links between university web sites. *Journal of the American Society for Information Science and Technology.* 53(12) (2002) 995-1005.

10) Boudories M A, Sigrist B and Alevijos P, Webometrics and the self-organization of the European Information Society, (1999). Available at :http://hyperon.math.upatras.gr/webometrics/. (2008, Nov 30).

11) Ibid.

12) Ingwersen P, The calculation of web impact factors, *Journal of Documentation*, 54(2) (1998) 236-243.

13) Thelwall M, Result from a Web Impact Factor Crawler, *Journal of Documentation* 57(2) (2001) 177-191.

14) Srivastava D and Kumar R P, Webometrics: An overview. *Information and Knowledge Management in Health Sciences: Newer Perspectives. MLAI 2004.* National Convention held on 9-22 December 2004 at Dr A L M Post Graduate Institute of Basic Medical Sciences, University of Madras, Chennai, (2004), p.197-202.

15) Smith A G, A tale of two web spaces: comparing sites using Web Impact Factors, *Journal of Documentation,* 55(5) (1999) 577-592.

16) Thelwall M, A research and Institutional Size Based Model for National University Web Site Interlinking, *Journal of Documentation,* 58(6) (2002) 683-694.

17) Notess G R, Search Engine statistics: relative size showdown. Available at: http://www.notess.com.search/sites/size.shtml. (2008, Nov 30).

18) Chu H, A Webometrics Analysis of ALA Accredited LIS Schools' Websites, 8th International Conference on Scientometrics and Informetrics. Proceedings-ISSI-2001-Vol.1, Sydney, 16-20 July 2001.

19) Noruzi A, Web Impact Factors for Iranian Universities, *Webology* (2)1, (2005).

20) Thelwall M, Web Impact Factors and Search Engine Coverage, *Journal of Documentation,* 56(2) (2000) 185-189.

21) Thelwall M, The top 100 linked pages on UK university website interlinking, *Journal of Documentation,* 58(1) (2002*)* 585-593.

There are in all 20 articles of which 19 articles pertain to various facets of webometrics. From the title of the first article it is not clear whether or not the first article belongs to webometrics. Prepare cards for all these 20 articles following a standard format. Refer to the examples of various types of entries which have been given in this Unit under Section 1.3.2. Once the cards have been prepared following standard format you can arrange them alphabetically. Let us call these as the 1st set of cards. Tracing so many papers on webometrics just from one article is a sort of an achievement. Locating all these articles from secondary services would have taken more time and may be all the articles would not have been traced.

Step 2 – Now, try to get all these articles and go through the section **References**.

Step 3 – From the References you select the articles that belong to webometrics. Prepare cards for all the webometrics articles selected from all the papers. Arrange them alphabetically. Let us call these as 2nd set of cards.

Step 4 – Merge second set of cards with the 1st set of cards. During merger you will find that there are duplicate cards for the same article in several cases. Remove those cards. The cards you have now are the 3rd set of cards.

Step 5 – In the third set of cards you will find some new authors who were not there in the 1st and 2nd sets. Now with these articles you repeat the steps from 2 to 4.

Continue the process till no new article is found. The set of cards you will get finally will result in a good bibliography. It is quite likely that you have not missed any important article in the process. A bibliography with author approach can be compiled with ease using the proper citation index.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

4) How will you compile a bibliography following author approach?

....

....

....

....

....

....

....

....

....

....

1.2.4 Offline and Online Approach

Nowadays no literature search by an LIS professional can be purely offline or online. Almost always it is a combination of both. For understanding a concept like 'charmed particle', you may consult printed documents like dictionaries and encyclopaedias. If the reference sources at your disposal fail to provide any information on the concept you may consult your colleagues, or you may ask the inquirer. These are all offline searches. If you have the Internet connection at your disposal you can straightway search the meaning of the term using the Internet.

Going through the descriptions in the Internet you know it is an elementary particle, and the field of study pertains to physics. After having a clear idea about the concept, you need to know the scope in terms of the type of documents to be covered, time period to be taken into account, whether non-English language documents are to be covered or not, etc. All these are again offline processes. If the inquirer is available at hand, ask her/him direct; if not, ask her/him through telephone, SMS or e-mail. When all these questions are settled, you should search the secondary services like *Physics Abstracts*. Now you have two options. If you have the facility for online search, you can search *Physics Abstracts* online. Otherwise you are to search the printed issues of *Physics Abstracts* manually which will be a time consuming affair.

Physics Abstracts is available both in digital form (which may be searched online) and printed form for manual search. Certain databases like *Index Medicus*, an invaluable indexing service for medical information is no more available in printed form. Its printed version stopped publication in December 2004. Now for medical literature one has to search basically *Pubmed* or *Medline*. Both these sources are available online.

From above, it is clear that in certain cases we have options for manual as well as online search. But, there are cases where we do not have any option and we are to go for online search. For searching the latest literature, online search is a much better option as in many cases latest issues of online journals appear on the Web weeks before the printed form reaches the library. Not long ago for a comprehensive literature search one was obliged to search a number of abstracting and indexing services either in printed form or in database form. There were separate databases for pure and applied science, social sciences, arts and humanities. Now just by tapping only one online source you can search literature pertaining to any field under the sun. Searching any of these sources, you can capture a substantial amount of literature. However, for comprehensive coverage, you need to search all the three sources, i.e. SCOPUS, ISI Web of Knowledge, and Google Scholar Advanced. A glimpse of the three sources is given below.

SCOPUS [URL: http://info.scopus.com/scopus-in-detail/facts/] – It is a huge information source owned by Elsevier and is available on the Web for subscribers. That means you cannot search this online source without subscribing to it. This database covers literature pertaining to science, technology, medicine, social sciences, arts and humanities from all over the world. Eighty per cent of all SCOPUS records date back to 1823 have abstracts. In numerical terms it covers 18,500 peer reviewed journals of which 1800 are open access, 400 trade publications, 340 book series, and 4.9 million conference papers. In addition, it captures 'articles in press' from over 3850 journals. In all, the database has 47 million records.

ISI Web of Knowledge [URL: isiwebofknowledge.com] – This stupendous online source incorporates a large number of huge databases and is combined with web linking and owned by Thomson Reuters. This is also searchable on subscription basis. It is a citation indexing and search service. Its coverage encompasses the pure and applied sciences, social sciences, arts and humanities. It provides bibliographic content and the necessary tools to access, analyse, and manage R&D information. A notable feature of the source is that multiple databases can be searched simultaneously. The database includes 23,000 academic and science journals, 23 million patents, 110,000 proceedings, and as many as 9,000 websites. The coverage goes back to 1900 and incorporates over 40 million source items. It includes among others *Arts and Humanities Citation Index, Biological Abstracts, CAB Abstracts, Derwent Innovations Index, Global Health Database, Index Chemicus, INSPEC, Medline, Science Citation Index Expanded, Social Sciences Citation Index, Web of Science* and *Zoological Record*.

Google Scholar Advanced – This source is *free* and *quite effective*. The details about the database are not known. It provides various search options. The search can be conducted **with all the words, exact phrase, at least one word, without the words, where the word occurs** (in the title or anywhere in the article), **author, publication and date**. If you have an Internet connection in your home, training centre or work place, you can start doing literature search on your own using the aforesaid database.

Case 1 – Sometimes you are to search a database with a number of words. Take for example the topic 'Swine flu in India in 2009'. We search the database with the option **with all the words**. One of the articles retrieved is the following:

Origins and evolutionary genomics of the **2009 swine**-origin H1N1 **influenza** A epidemic

195.134.113.71 [PDF]GJD Smith, D Vijaykrishna, J Bahl, SJ Lycett, M … - Nature, **2009** - nature.com

... In vitro and in vivo characterization of new **swine**-origin H1N1 **influenza** viruses **...** Genesis of a highly pathogenic and potentially pandemic H5N1 **influenza** virus in eastern Asia **...** Novartis Healthcare Private Limited; Hyderabad **India**. More science jobs. Post a job for free. **...**

In the retrieved article you find that all the words including 2009 are occurring. In place of flu, influenza is occurring. The relevancy of the article retrieved is quite high.

Case 2 – In the above case, you can see that the terms 'swine' and 'flu' have not occurred together. You want them to occur together. To achieve this we opt for the option **exact phrase** and get the following result:

1. The health belief model: A decade later

umich.edu [PDF]NK Janz, MH Becker - Health Education & Behavior, 1984 - heb.sagepub.com

... Overall, we have identified four investigations 10-13 published since 1974 that have

applied the HBM in attempts to understand vaccination behavior; three of these studies concerned **Swine Flu**, and one dealt with influenza. **...**

2. **Swine flu**: A field study of self-serving biases

L Larwood - Journal of Applied Social Psychology, 1978 - interscience.wiley.com Self-serving biases were examined as an explanation for **swine flu** inoculation behavior. Subjects who had recently had the opportunity to obtain the shot were surveyed by questionnaire. As predicted, most persons held biased beliefs that their own health was superior to that

There are many articles, we are quoting just two. You may notice that in both the cases swine flu has appeared together.

Emergence of a novel **swine**-origin influenza A (H1N1) virus in humans
TRSIA H1 - New England journal of medicine, **2009** - contentnejmorg.zuom.info
... See p. 2605; editorials, p. 2666 and P. 2667; perspective, p. 2595; CME, P. 2691 original article

Triple-Reassortant **Swine** Influenza A (H1) in Humans in the United States, 2005–**2009** Influenzais known to infect several different hosts, in- cluding humans, birds, and pigs. **...**

Cancer statistics, **2009**

A Jemal, R Siegel, E Ward, Y Hao, J Xu, … - CA: a cancer journal for …, **2009** - Am Cancer Soc DOI: 10.3322/caac.20006 **2009**;59;225-249; originally published online May 27, **2009**; CA Cancer J Clin Michael J. Thun Ahmedin Jemal, Rebecca Siegel, Elizabeth Ward, Yongping Hao, Jiaquan Xu and Cancer Statistics, **2009 ...** This information is current as of June 4, 2010

[BOOK] Microwave engineering

lavoisier.fr [HTML]DM Pozar - **2009** - books.google.com WILEY- **INDIA** EDITION MB Microwave Third Edition DAVID M. POZAR STUDENT EDITION RESTRICTED! FOR SALE ONLY IN **INDIA**, BANGLADESH, NEPAL, PAKISTAN, SRI LANKA & BHUTAN **...** The ABCD Parameters of Some Useful Two-Port Circuits. Circuit ABCD

Case 3 – We are taking our earlier topic 'Swine flu in India in 2009' and searching
with the option **at least one word**. When we are not sure under which word we
shall find an entry, we use a number of words for our search. In this method
many irrelevant items are also retrieved apart from one or two relevant items
that help. The result of the search shows that in the first citation there is **swine
influenza** and **2009**, in the second citation only **2009**, and in the third citation
India and **2009** is there. Of the three citations, only the first one is relevant and
the other two are irrelevant.

Case 4 – The 4th option is **without the words.** You know that a huge tsunami hit
Indonesia, Thailand, India, Sri Lanka and other countries on 26 December 2004.
Suppose a researcher wants to study the literature on tsunami pertaining to India
only. In such a situation s/he may frame her/his query as 'Tsunami in India' for
the option **with all the words**, and Thailand, Indonesia, Sri Lanka , etc. for the
option **without the words**. The search will retrieve only those items that pertain
to India. Of course, if an item is dealing both with India and Thailand or India
and any other country, that will also be retrieved.

Case 5 – Now our topic is FIFA World Cup 2010, and option is 'where the word
occurs'. In this case we take 'in the title of the article'. The result is as follows:

Predicting the economic impact of the **2010 FIFA World Cup** on South
Africa

sa-investment.com [PDF]HR Bohlmann, JH Van Heerden - International
Journal of Sport …, 2008 - Inderscience Int. J. Sport Management and Marketing,
Vol. 3, No. 4, 2008 **...** Predicting the economic impact of the **2010 FIFA World
Cup** on South Africa **...** Heinrich R. Bohlmann* and Jan H. van Heerden **...**
Department of Economics University of Pretoria Pretoria 0002, South Africa E-
mail: **...**

Case 6 – Now let us search using the option *Return articles written by ……* We
choose the author as "M P Satija". It retrieves many articles of M P Satija such as
the following:

[CITATION] Dewey Decimal Classification: a practical guide

LM Chan, JP Comaromi, **MP Satija** - 1996 - lavoisier.fr Retour page d'accueil
Chercher, sur, Tous les supports. Retour page d'accueil, Plus de 1.619.000 de
titres à notre catalogue ! Notice. Prix indicatif 57.62 • Ajouter au panier. **...**

[PDF] Doctoral research in library and information science in India: some
observations and comments

librijournal.org [PDF]MP Satija - Libri, 1999 - librijournal.org
This article gives a state-of-the-art overview of library and information science (LIS)
education in India as a back- ground to reviewing the doctoral research in the field.
It traces the origin and growth of Ph.D. programmes in LIS in India and highlights
the initiative and efforts of Dr **...**

Case 7 – Now we are using the option *Return articles published in …* We choose
here the journal *Annals of Library and Information Studies.* It retrieves many
articles, some of which are as follows:

---

1. [PDF] <u>Insdoc's contribution to bibliometrics</u>

isibang.ac.in [PDF]BK Sen, B Dutta, AK Das - … of **library** and **information studies**, 2002 - drtc.isibang.ac.in

* Paper presented at the XII IASLIC Conference, Trivandrum, 4–7 December 2001. **…** Email: bksen@ndb.vsnl.net.in **…** Email: bidyarthidutta@rediffmail.com, anupdas2072@hotmail.com **…** ABSTRACT: Traces the history of bibliometric research, **...**

2. [CITATION] TKM College of Engineering Library Automation System

TA Abdul Azeez - **ANNALS** OF **LIBRARY** AND **INFORMATION STUDIES**, 2004 <u>BL Direct</u>

3. <u>Use of internet based e-resources at Manipur University: a survey</u>

S JOTEEN… - **Annals** of **library** and **information studies**, 2009 - cat.inist.fr Describes a survey on the use of the electronic information focusing on the Internet services by the users of Manipur University Library. Also examines the utilization, purpose, difficulties and satisfaction level of users about Internet based e-resource services provided by the **....**

Case 8 – This is the last option and relates to date. The option starts with *Return articles published between* … Here you are to give the date, say 2008 and 2010. Along with this you can use some other options as well. Here we are using three options, i.e. Bibliometrics (1st option), Annals of Library and Information Studies (2nd option) and 2008 – 2010 (3rd option). The search retrieves the following article. It is to be noted that a number of articles on bibliometrics have appeared in the Annals during the period. One has been retrieved because other articles are missing in the database.

[HTML] <u>Lotka's Law and authorship distribution in nutrition research in Bangladesh</u>

academia.edu [HTML]SMZ Ahmed, MA Rahman - … and **Information Studies**, 2009 - univdhaka.academia.edu

SM Zabed Ahmed's Papers: Lotka's law and authorship distribution in nutrition researchin Bangladesh, A user-centred design and evaluation of IR interfaces, Computerisation of libraries in Bangaldesh, Library and information science literature in.

1.3 BIBLIOGRAPHIC SERVICES

Definition and scope – Services in the form of a bibliography are termed as bibliographic services. Bibliographic services will cover supplying ad hoc bibliography on request, accession list, documentation list in the form of an indexing service or abstracting service which may also serve as current awareness service, selective dissemination of information service, etc. We shall cover in this Unit only compilation of an ad hoc bibliography . Other bibliographic services will be covered in subsequent units.

1.3.1 Compilation of an ad hoc Bibliography

An ad hoc bibliography is usually compiled on request, in response to a pressing need, for the purpose of record, etc. Researchers badly need bibliographies to

know what has already been done in their field of work, who were the persons who have done the work, etc. An ad hoc bibliography is a dependable reference tool for the researcher. While applying for a job a scholar has to compile a bibliography of her/his own work to attach the same with the application form. The bibliography clearly reflects how many papers the scholar has published over the years, in which journals s/he has placed her/his papers, etc. From the bibliography itself an interviewer gets a good idea as to how active the scholar has been in her/his research activities, and the quality of the papers. In annual reports published by various academic and research institutions, a bibliography of the papers published by the institution is appended. It serves as a record for the institution and also helps to disseminate information about the papers published by the institution during the preceding year.

Compilation – The end product of literature search is a bibliography.

Step 1 – Prepare cards for all the relevant items.

Step 2 – Once the cards have been prepared you need to edit the cards to ensure that all the cards have been prepared following the standard format and consistency has been maintained.

Step 3 – **Arrangement of the cards –** The cards can be arranged alphabetically author-wise if the number is less. You need to think of alternate arrangement if the number is big, say one hundred or more. There are bibliographies that contain thousands of entries. In such cases you may ask the client as to how the bibliography should be arranged. The client may suggest chronological arrangement, subject-wise arrangement, classified arrangement, etc.

In chronological arrangement, under every year you may arrange the cards alphabetically author-wise. In subject-wise arrangement, under each subject, entries are to be arranged alphabetically author-wise. In classified arrangement also entries are to be arranged alphabetically author-wise under the ultimate class number. When a bibliography with a large number of entries is published in book form, author, subject, chronological and geographical indexes are provided as per the need.

1.3.2   Sample Entries

In the examples given below the entries are prepared according to the guidelines given in *MLA Handbook for Writers of Research Papers.* 7th ed. New Delhi: Affiliated East-West Press, 2009.

Books

Booth, P. F. *Report Writing.* 2nd ed. Kings Ripton: Huntinton, 1991. Print.

Gerson, S. J., and S. M.Gerson. *Technical Writing, Process and Product*. 2nd ed. New Jersey: Prentice Hall. 1997. Print.

Jordon, S., J.M. Kleiman, and H.L. Shimberg. *Handbook of Technical Writing Practices.* Vol. 2. New Jersey: Wiley, 1971. Print.

Krishan Kumar. *Reference Service.* 2nd rev. ed. New Delhi: Vikas, 1980. Print.

Collected works <u>See</u> *Festschrift volumes*

Conference papers

Pirie, N. W. "Note on the Simultaneous Publication of Papers of Two Different Levels of Completeness" *Royal Society Scientific Information Conference*, 1948. London: Royal Society, 1948. 419-422. Print.

Course materials

Sen, B. K. "Information Sources – Categorisation". MILL-101-Unit-5. New Delhi: Indira Gandhi National Open University, 2006. Print.

Dictionaries

Tracey, William R. *The Human Resources Glossary (English).* 3rd ed. Florida: St. Lucie Press., 2004. 824p. Print.

Urdang, Laurence, ed. *The Random House Dictionary of the English Language*. College ed. Bombay: Allied Publishers, 1972. Print.

Encyclopaedia articles

"Titanic". *Britannica Ready Reference Encyclopaedia*. New Delhi: Encyclopaedia Britannica (India), 2005: 263-4. Print.

Encyclopaedias

Odhams Colour Library of Knowledge. London: Hamlyn, 1970. Print.

Festschrift volumes

Raju, A. A. N., and L.S. Ramaiah. *National Bibliographical Control: Problems and Perspectives: Essays for AK Dasgupta.* New Delhi: Allied, 2003. Print.

Festschrift volume articles

Parameswaran, M**.** "Kerala Studies Collections and the need for a Union Catalogue". *Books to Bytes: Library and Information Technology in the New Millennium: Essays in Honour of Prof L S Ramaiah*. Ed. N. V. Jagga Rao and M. Ramchander. New Delhi: Ess Ess Publications, 2000. 256-263. Print.

Internet <u>See</u> *World Wide Web*

Journals

Annual Review of Information Science and Technology. Maryland: American Society of Information Science and Technology, 1966-. Print.

Indian Library Science Abstracts. Kolkata: IASLIC, 1967-.Print.

Journal articles

Biswas, S.C., and S. Mandal. "Library and Information Science (LIS) Research in India vis-a-vis Research Methodology in LIS Curricula". *Vidyasagar University Journal of Library and Information Science* 6 (2001): 3-19. Print.

Kannappanavar, B. U., and M. Vijayakumar. "Fifty Years of LIS Research in India: Trends and Developments". *SRELS Journal of Information Management* 37.4 (2000): 267-300. Print.

"Swine Flu". *Readers Digest* 50.8 (August 2009):148-161. Print.

Newspaper articles

Bagga, Bhavan. "Son's Testimony Seals Father's Fate". *Mail Today* 3.4 (19 November 2009):16. Print.

Patents

Sen, Amlan, and Chin Guan Khaw. *Preheating System and Method for Silicon Dies* (WO/2009/085009). Geneva: World Intellectual Property Organization, 2009.

Standards

Indian Standards Institution. The *National Flag of India (Cotton Khadi)* (*Revised*). New Delhi: Indian Standards Institution, 1964: 15

Theses/Dissertations (unpublished)

Das, Anup Kumar. "An Evaluative Study of Some Selected Libraries in India undergoing the Process of Digitization". PhD thesis. Jadavpur University, 2008: 334. Print.

World Wide Web

N.B. After the usual entry add the word Web. Date. URL.

OECD. *State-of-the-Art Review on Environment, Security and Development Cooperation.* 2002. Web. 29 June 2009. <http://www.iisd.og/pdf/2002/ envsec_oecd_review>.

"Human Resources". Web. 28 November 2009. <http://en.wiktionary.org>.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

5)   Describe the different ways of arranging entries in an ad hoc bibliography.

....

....

....

....

....

....

....

....

....

....

1.4 SUMMARY

This Unit is the first Unit of the of the Block entitled 'Conventional products and services', precedes with an introduction to the Block. The four units that comprise the Block are briefly discussed in the introduction to make the students aware of the contents of the Block. The connotation of literature in the context of literature search is explained. For literature search, usually two approaches are followed i.e. subject approach and author approach. The *subject approach* has been described in three steps. The first step discusses the *request for the search*. The relevant topics relating to the query such as *purpose* and *scope* of the query have been discussed. While discussing *scope* the factors that have taken into account are the *topic*, *period*, *geographical area*, *languages,* and the *forms of documents.* Reference interview has also been touched upon. Step two discusses the practical aspects of the compilation of the bibliography and searching secondary and tertiary sources. During the search process, more than one possibility may arise and several situations may crop up. Discussion throws light on the actions to be taken in all these cases. Multifocal queries which are not uncommon have also been discussed. Step three dwells on the search for the latest literature involving primary periodicals, conference proceedings, festschrift volumes, research reports, patents, standards and specifications, monographs and treatises. The *author approach* is also an effective approach for the compilation of a bibliography. It has been discussed detailing all the steps involved in the process. Bibliographic services are many and varied. In this Unit, compilation of an ad hoc bibliography has been discussed. Lastly, some examples have been provided for various types of entries.

1.5 ANSWERS TO SELF CHECK EXERCISES

1) Before undertaking literature search, you will have to be sure about the topic of the search. Suppose, from the query it appears that the topic is 'airways'. Just from the term you should not jump at the conclusion that the topic pertains to aviation. It may pertain to medicine as well since in medicine 'airways' means 'the passage by which air reaches the lungs.' In this case, to be sure about the topic you need to query the researcher. If the researcher is a doctor s/he will say that airways means the passage by which air reaches the lungs. From this it is clear that the topic belongs to medicine. Accordingly you can search the sources on medicine and prepare the bibliography.

   At times you may receive request for such topics as 'chimaera' or '*Ziziphus ziziphus'* the meaning of which is not known to you. In such cases you should consult a dictionary, encyclopaedia or any other standard reference source that may give you the information. You may note that for Latin names like *Ziziphus ziziphus,* general dictionaries may not be of much use. You need to take the help of the Internet or an expert.

2) For searching latest literature, secondary services will not be of much use. Primary sources like primary periodicals, conference proceedings, festschrift volumes, research reports, patents, standards and specifications, theses, research monographs, etc. are to be consulted. They may be consulted in a library if some of them are available. The World Wide Web will have to be searched since many primary documents appear on the Web much before the same reaches a library.

3) Multifocal topics have multiple focuses. Often for such topics different secondary sources should to be consulted. Take for example, the topic 'pesticide poisoning of birds'. Here, pesticide pertains to chemistry, poisoning to toxicology, and birds to zoology. For a comprehensive bibliography on the topic you must consult *Chemical Abstracts* for pesticides, *Pubmed* for toxicology, and *Biological Abstracts* for birds. For birds you may also consult *Zoological Record.* It will be better if you can consult Web of Science, SCOPUS as well as Google Scholar. Take another topic – 'application of laser in communication, medicine, and engineering'. Laser belongs to optics, i.e. physics. There are three more subjects besides physics. For compiling a bibliography on this topic, you need to consult *Physics Abstracts, Compendex, Pubmed, Web of Science, SCOPUS, and Google Scholar.*

4) For compiling a bibliography with author approach, the following steps will be undertaken:

   i)   The name of an author who contributes papers on the topic will be found out. Attempt will be made to find out a prolific author. If the same cannot be found, then help of the researcher will be taken, who will be able to supply one or more names. The Web can also be searched with the name and the topic. A number of websites may be on the same name. In that case that particular name will be chosen which tallies with the author's name and the topic.

   ii)   Now, a paper contributed by the author on the topic is to be located.

   iii) A copy of the paper is to be procured.

   iv)   The references given in the paper will be checked.

   v)   Cards will be made for all the relevant papers. This will form the first set of cards.

   vi)   Now, papers contributed by all those authors figuring in the entries will be located, procured and scanned.

   vii) Cards will be made for all the references appearing in the papers. This will form second set of cards.

   viii) Cards of the first set and the second set will be merged and duplicate cards removed. This forms the third set of cards.

   ix)   New authors figuring in this set will be identified and the steps (vi) to (viii) will be repeated for them.

   In this way the process will continue till no new author is found. The bibliography compiled in this way will capture all the major contributions in the field. Using the proper citation index, a bibliography with author approach can be compiled with ease.

5) The entries can be arranged alphabetically author-wise if the number is less. You need to think of an alternate arrangement if the number of entries is high, say one hundred or maybe more than one thousand. In such cases, you may ask the client as to how the bibliography should be arranged. The client may suggest chronological arrangement, subject-wise arrangement, classified arrangement, etc.

In chronological arrangement, under every year you may arrange the cards alphabetically author-wise. In subject-wise arrangement, under each subject, entries are to be arranged alphabetically author-wise. In classified arrangement also entries are to be arranged alphabetically author-wise under the ultimate class number.

1.6 KEYWORDS

Ad hoc Bibliography	:	It is a bibliography that is compiled in response to a request, a particular need or for a specific purpose. These bibliographies are one-off bibliographies. Sometimes these bibliographies appear in the form of books as well.
Helminthology	:	The filed of study that deals with worms.
Primary Periodical	:	A periodical that publishes generally primary literature such as research papers, short communications, etc.
Secondary Periodical	:	A periodical providing information about primary sources of information in the form of abstracts, simple citations, etc. An abstracting, indexing or reviewing periodical is a secondary periodical.
Webometrics	:	It tries to measure the World Wide Web i.e. Web to unearth the number and types of hyperlinks, structure of the Web and its usage patterns. Björneborn and Ingwersen defines webometrics as "the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the Web drawing on bibliometric and informetric approaches."

1.7 REFERENCES AND FURTHER READING

"Airways". *The Concise Oxford Dictionary*. 10th ed. 1999. Print.

Chemical Abstracts Service. Web. 14 April 2010. <http://www.cas.org/>.

Chemical Abstracts Service. Web. 20 April 2010. <http://en.wikipedia.org/wiki/Chemical_Abstracts_Serrvice#Print-periodical>.

"Holography". Web. 23 April 2010.< www.answers.com/topic/holography>.

National Library of Australia. Catalogue. Web. April 2010. <http://catalogue.nla.gov.au/>.

Sen, B. K. "Literature Search". Training Course in Documentation and Information Services. October 18 – December 13, 1975. – Course Material. Paper IV.3. Print.

Stych, F. S. "Flow Chart Method". *R Q* 5.4 (1966): 14-17. Print.

"Webometrics". Web 26 April 2010. <http://en.wikipedia.org/wiki/Webometrics>.

UNIT 2 CURRENT AWARENESS SERVICES (INCLUDING SDI AND ALERTING SERVICES)

Structure

2.0 OBJECTIVES

After reading this Unit, you will be able to:

• explain the meaning of and need for current awareness services;

• describe the types of current awareness services, which are prevalent in the world;

• compile a current contents type of service;

• prepare entries for the publication namely 'announcement of research in progress';

• prepare user and document profile for SDI service; and

• bring out a publication giving data on forthcoming conferences.

2.1 INTRODUCTION

For any active researcher, it is necessary to keep herself/himself abreast of the latest developments in the field. Everyday the literature is pouring in all over the world in different forms and diverse languages. It is impossible for a researcher to keep track of the entire literature just by going through a few journals being received in the library. Suppose, somebody's area of interest is 'information use study'. Now, s/he has three options – (i) to search the World Wide Web (hereinafter

referred to as Web), (ii) to go through the documents that are likely to contain articles on the topic, and (iii) to search abstracting and indexing services available in the relevant field. Searching the Web, definitely a researcher will get some articles on the topic. Unfortunately that will not be comprehensive since many articles will not appear in the Web.

It is known that the articles on the topic will be available in the journals on library and information science. As you know that the journals on library and information science (LIS) are not few. From India itself, more than twenty LIS journals appear in English and other languages. If you take the world as a whole, the number will go into hundreds. Getting all these journals in one library is impossible. Even if you get them in one library you will not be able to read them all as they will be in different languages.

You may go through abstracting and indexing services. Some of them will be available online and their searching will entail cost. Moreover, information that you will get through these services will be backdated by a few weeks to few months. The problem is the same for research scholars in all fields. Now, the question is – what is the way out? Scientists faced this problem long ago. The problem became acute from 1960s onwards when literature started growing exponentially. To counter the problem, a new type of service emerged called **current awareness service**.

2.2 CURRENT AWARENESS SERVICES

These services appear in various forms to inform researchers as to the appearance of the latest literature in the field with minimum loss of time. In many cases the service reaches the researcher within a fortnight after the publication of the primary source.

2.2.1 Definition and Scope

When current awareness service (CAS) was conceived, at that time the Internet, Web, e-mail, etc. were non-existent. Print form was the order of the day. Hence, inclusion of current literature in indexing and abstracting services and their distribution in the world usually by sea mail used to take time in terms of months. Take for example, a monthly indexing service operating from USA used to take one month for the processing of the literature, another month for printing, binding and dispatch, and one more month for sea mail to reach the document in India, China or Japan. Users in these places could see the literature in the fourth month that means after a minimum delay of three months. At that time a service was necessary to inform users about the latest literature quicker compared to the time taken by the prevalent abstracting or indexing services. Suppose, a weekly service that could inform users within a month about the latest literature, the service was welcome. The situation generated the demand for such a service and the services sprang up in different forms, size and shape.

CAS at that time was defined as an information service through which users were informed promptly enough about recently published literature before they were noticed in regular abstracting and indexing services. Now, the situation has changed. Everyday a substantial amount of current literature is being placed in the Web and users from any part of the world are seeing the same on the Web practically without any loss of time. A question automatically may arise in your

mind – Has CAS become useless today? The answer is negative, because a huge
bulk of current literature is not available on the Web, specifically the literature
generating from developing and non-anglophone countries. The current awareness
services that started in pre-Internet era are still continuing.

In this Unit, we are going to discuss about CAS of pre-Internet era with indications
as to how the same has been affected with the advent of the Internet. The following
types of CAS are prevalent in the world:

1) Title announcement service

2) Announcement of research in progress

3) Selective dissemination of information service

4) Advance information about forthcoming conferences

5) Newspaper clipping service

As 'newspaper clipping service' will be covered in Unit 3 of this Block, we shall
discuss here the first four items.

2.2.2   Characteristics

CAS has quite a few characteristics. Some of the characteristics are mentioned
below:

1) **It is basically an announcement service brought out usually in printed
   form**. Many libraries bring out the service in the name of accession list,
   documentation list, current awareness list, current awareness service, etc.
   Now, they may be brought in digital form and disseminated through the
   Internet, intranet, extranet and e-mail.

2) **Speed is the essence of CAS. As such, the periodicity of the service usually
   varies weekly to monthly**. Because of the short periodicity the
   literature in the service appears speedier than usual abstracting and indexing
   services.

3) **It aims to serve or generate in researchers current approach to
   information**. The term 'current approach' appearing in the sentence needs
   to be explained. Studies have identified four distinct types of approaches
   researchers follow in their quest for information. They are: i) Exhaustive
   approach; ii) Everyday approach; iii) Current approach; and iv) Catching-
   up or Brushing-up approach. Using current approach researchers try to keep
   themselves abreast of the developments in their respective fields. The
   approach is mainly a scanning operation undertaken by the researcher herself/
   himself.

4) **It does not answer any specific query but provides a broad view of recent
   developments**. Suppose a researcher is interested in recent papers on user
   studies s/he scans through a current awareness service on a broader field
   and notes down the bibliographical details of the articles on user studies. In
   the next step s/he will gather these papers from libraries, information centres,
   etc. and use them for her/his research work.

5) **The service is usually on a broader area**. Take for example, *Current
   Contents,* the world famous current awareness services*.* They are on such

broad areas as: Agriculture, Biology and Environmental Sciences, Arts and Humanities, Clinical Medicine, Engineering, Computing and Technology, Life Sciences, Physical, Chemical and Earth Sciences, and Social and Behavioral Sciences. Using any of these services, the researchers get the papers from the core journals of their field and also from journals related or alien to their field.

6) **The service is a formal channel and supplements the information received through informal channels**. In many cases researchers receive preprints etc. from the fellow researchers. Even through conversation, e-mails, letters, etc. they get the glimpse of the latest developments in their field of activity. These are all informal channels. Whatever is being received through informal channels is not enough. That is the reason they need to go through CAS.

7) **The service is meant for scanning**. Researchers usually scan the pages of a CAS, and note down the papers of their interest if they spot any.

8) **The service is for temporary use only**. Whatever appears in CAS, reappears in indexing and abstracting services afterwards. In essence, it informs the researcher in advance. In some respect, it resembles a newspaper. Every morning it updates you with the current news. Similarly every issue of a CAS updates you with the current development.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1) Highlight the salient characteristics of 'current awareness service'.

....

....

....

....

....

....

2.3   TITLE ANNOUNCEMENT SERVICE

The main purpose of the service is to disseminate the titles of the articles along with their bibliographical details. The service is provided in various forms such as reproducing the title pages as they are, without making any changes. This service is also known as *Current Contents* type service and was introduced by Eugene Garfield of Institute for Scientific Information, USA. The generation of this type of service involves least cost, labour and time. In this type of service the users have to scan the entire contents to ferret out the items of their interest. To make the service more user-friendly, titles may be arranged alphabetically under broad subjects, under class numbers or under the names of divisions, sections, etc. We shall see how CAS can be produced in all these forms one by one. First, we will concentrate on *Current Contents* type service.

2.3.1   Current Contents Type Current Awareness Service

Suppose, you have been asked by the head of LIS department to provide such a service. You must know that providing such a service is neither very labour intensive nor very costly. To start the service you need to follow the given steps.

Step 1 – First of all you must decide the *title* of the service as well as its *periodicity*. Suppose the LIS department on an average receives four to five issues of different journals in a month. In such a situation a monthly service will serve the purpose. The title of your service may be *Current Awareness Bulletin on LIS*. The cover page of the Bulletin will show volume number, issue number, and the name of the month and year. This apart, the name of the compiler, and the address of the Department may be given. You can also obtain ISSN number for this Bulletin from National Institute of Science Communication and Information Resources (NISCAIR).

Step 2 – At the beginning of the month, gather the issues that have been received during the last month. Suppose, the following issues have been received during March 2010. *Annals of Library and Information Studies* – March 2010; *Collnet Journal of Scientometrics and Information Management* – December 2009; *DESIDOC Journal of Library and Information Technology* – March 2010; *Indian Journal of Library and Information Science* – January-April 2010; and *Information Studies* – January 2010.

Step 3 – Based on the contents of the above mentioned issues you need to bring out the Bulletin.

Step 4 – At this step you must decide the number of copies you will reproduce for each issue of the Bulletin. For deciding the number you need to take into account the number of faculty members (whole time and part time); PhD and M Phil scholars of LIS department; a few copies may be required for BLIS and MLIS students; and the head of LIS department may like to send some copies to other universities. Taking all these into account you may come to the conclusion that the number of copies required is 50 approximately.

Step 5 – If you have decided to bring out *Current Contents* type publication, then you need to make 50 copies of the contents page of each of the five issues of the periodicals mentioned above. Arrange the contents pages of each periodical in alphabetical order for each copy of the Bulletin. Staple all these pages along with the cover page and your CAS Bulletin is ready. It will take the shape as given in the following pages (33-37).

Step 6 – Current awareness services produced by organisations for local consumption are usually distributed free. It may be priced if the demand is very wide or global.

Step 7 – Once in a year you must conduct a use study of the service. As the service is free everybody will like to have it but may not use it. Through use study you will know how the service is being utilised and accordingly you will be able to delete old users and enlist new users.

We have given below the scan copy of the contents of the journals mentioned at the step 2. These pages are preceded by the cover page of the service. This sample has been given here to give you an idea about the service.

Compiled by
(Name of the compiler)

Department of Library and Information Science
(Name of the University)

Annals of Library and Information Studies

http://www.niscair.res.in

CONTENTS

CONTENTS

Indian Journal of
Library and Information Science

Contents

INFORMATION STUDIES

Vol 16 No 1 January 2010

CONTENTS

The type of service is brought out without any author or subject index. If there is a strong demand for such indexes they may be provided. That would obviously entail more labour, time and cost.

Advantages

The advantages of this type of service is that it can be brought out very quickly, with less cost and labour, and practically without any editing. It serves the purpose of the users quite well. Suppose a researcher is interested in the articles on **use studies**, s/he may go through the pages and notice that the following articles are there on use studies. It will not take more than a few minutes to locate these articles. Below is given the list of articles gleaned from the contents pages of the journals included in the service.The list has been prepared using the MLA Handbook for Writers of Research Papers. 7th ed.

1) R. H. Walmiki, K. C. Ramakrishnegowda, and K. R. Prithviraj. "Awareness and Use of UGC-INFONET Digital Library Consortium by the Faculty Members of Karnataka State Universities". *Annals of Library and Information Studies* 57.1 (2010): 33-43.Print.

2) K. Natarajan, B. Suresh, P. Sivaraman, and R. Sevukan. "Use and User Perception of Electronic Resources of Annamalai University: A Case Study". *Annals of Library and Information Studies* 57.1 (2010): 59-64. Print.

3) S. Thanuskodi. "Information Needs and Use Pattern of District Court Lawyers of Salem and Erode in Tamil Nadu". *DESIDOC Journal of Library and Information Technology* 30.2 (2010): 59-69.Print.

4) V. Ramesh Babu, and M. Natarajan. "A Case Study on the Use of Internet Resource by Research Scholars and Students of Annamalai University. *Indian Journal of Library and Information Science* 4.1 (2010): 5-10.Print.

5) Bulu Maharana, Bipin Bihari Sethi, and Pankaj Kumar Mallick. "Usage of Electronic Information Resources and Services at IIT, Kharagpur Library: A Survey". *Indian Journal of Library and Information Science* 4.1 (2010): 25-33.Print.

6) Syed Shah Ahmed Sarmast. "Use of Internet in Karnataka State Universities". *Indian Journal of Library and Information Science* 4.1 (2010): 33-38.Print.

7) Gururaj S. Hadagali, and B. D. Kumbar. "Use of Internet by Faculty Members and Research Scholars in the 21st Century: A Study of University Libraries of Karnataka State, India". *Indian Journal of Library and Information Science* 4.1 (2010): 61-73.Print.

8) T. Saravanan, P. Ushadevi, and V. Senthilkumar. "Google Use and Users: A Survey". *Information Studies* 16.1 (2010): 49-. Print.

Disadvantages

If the service comprises many pages, say 50 or more, then it takes time to locate the articles of interest. Moreover, in the *Current Contents* type service there is little scope for editing allowing thereby mistakes to exist. At times, because of poor reproduction, some titles become unreadable.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

2) Describe the advantages and disadvantages of *Current Contents* type of current awareness service.

....

....

....

....

....

....

....

2.3.2   Current Awareness Service Arranged by Subject

To avoid the shortcomings mentioned earlier the CAS can be brought out by arranging entries according to the subject or class number. The job can be done manually or with the aid of a computer.

Manual Method – For bringing out this type of service you need to follow the steps as enumerated under 2.3.1 except Step 5. At this step you need to prepare an entry for each of the articles. For writing or typing the entries you may use catalogue cards. The entry should follow a style decided by your organisation. For such services entries in certain respect are different from the catalogue entries you prepare for books etc. following AACR-2R or any other code. For example, in a catalogue entry you do not mention all the authors of the publication if their number exceeds two (in the case of CCC) and three (in the case of AACR-2R). For CAS and other secondary services the rule is to include all the authors. The rendering of the name of the authors however can be done according to CCC or AACR-2R. At the top of each entry you must write/type the broad subject heading or the class number. You may prepare an entry like this.

Entry with the Subject Heading

> **Bibliometrics**
>
> Sudhier, K. G. "Application of Bradford's Law of Scattering to the Physics Literature: A Study of Doctoral Theses Citations at the Indian Institute of Science". *DESIDOC Journal of Library and Information Technology* 30.2 (2010): 3-14.Print.

You may note that in the heading the term used is Bibliometrics and not Bradford's law. This is because in CAS we generally use broad subject headings to speed up the work.

When all the entries for a particular issue of CAS has been prepared, they are to be arranged first according to the subjects, and then alphabetically author-wise within each subject. If it is decided to provide an author index, the entries are to be given serial numbers. For such a CAS, subject index is redundant. However, *See* and *See also* references may be provided such as

   Bradford's Law *See* Bibliometrics

   Lotka's Law *See* Bibliometrics

Once the arrangement is complete along with 'See' and 'See also' references, the whole matter is to be typed, duplicated and distributed to the users.

Computer-assisted Method – In this method a database is to be prepared using CDS/ISIS, WINISIS or any other software package. The database should take care of all the elements that are required for each entry. The data for each entry is to be inputted. When the data entry for the whole issue is complete, a print-out is to be taken out which will then be duplicated and distributed to the users. The issue of the CAS may be placed in the website of the organisation whereby it will be used by many. The issue may also be e-mailed to users.

2.3.3 Current Awareness Service Arranged by Class Number

Generally, in CAS, entries are not arranged according to class number. Possibly, the reason is that in many cases class numbers are not available. Take for example, the subject 'bibliometrics', the class number of the subject is not available even in the latest edition (22nd) of DDC. However, if it is decided to arrange the entries according to class number, then the method described under **Section 2.3.2** should be followed. The only difference will be in relation to the subject heading. In place of the subject heading the class number will be written along with the subject heading as shown in the entry given below.

Entry with the Class Number and Subject Heading

> **2T Bibliometrics**
>
> Sudhier, K. G. "Application of Bradford's Law of Scattering to the Physics Literature: A Study of Doctoral Theses Citations at the Indian Institute of Science". *DESIDOC Journal of Library and Information Technology* 30.2 (2010): 3-14.Print.

N.B. The class number given in the entry is according to 7th edition of Colon Classification.

In this type of service both author index and subject index may be provided.

2.4 ANNOUNCEMENT OF RESEARCH IN PROGRESS

In this world at any given point of time, millions of research projects are found to be on-going. For a researcher, it is more or less compulsory to know the research work that has already been done in her/his field, and the ones that are going on. Deficiency in this respect can easily lead to the duplication of research work. Information about the research work that has already been done is available in secondary information services, primary journals and to a certain extent on the Web. Sources of information regarding on-going research projects are not many. That is why, universities, research organisations, and others from time to time bring out their respective directories of on-going research projects. Some of the examples are given below:

1) Inter-University Board of India & Ceylon. *Research in Progress*. 4 vols. New Delhi: the Board, 1968-1972. Print.

   Vol. 1. – Physical Sciences. 1958-1966. 1968.

   Vol. 2. – Biological Sciences. 1958-1966. 1968.

   Vol. 3. – Social Sciences. 1958-1966. 1970.

   Vol. 4. – Humanities. 1958-1966. 1972.

2) Indian National Scientific Documentation Centre. *Current Research Projects in CSIR Laboratories*. Delhi: INSDOC, 1976.Print.

An entry in this type of publication usually contains the name/s of the investigator/s, address/es of the investigator/s, title of the research project, date of starting of the research project, the date when the project is likely to be finished, and the

abstract. For research projects undertaken for obtaining degrees such as PhD, the names of the degree and the guide are also given.

It is not compulsory to provide the abstract. If the authorities concerned decide to provide the abstract, it should be included. It should include among others the research question, objectives, methodology adopted, work done so far, etc.

A hypothetical entry is given below:

Monika Devi. Use of e-resources in Selected College Libraries of National Capital Region: A Survey. IGNOU. 2010-2014. *Guide*: B.K.Sen.

Many college libraries of NCR have opted for e-resources because of their easy access, up-to-dateness, and a number of other facilities. To answer the question as to the extent of use of the resources the survey was undertaken. The survey being conducted using the questionnaire and interview methods intends to find out among others the college-wise data as to the users, gender ratio, breakdown of the users according to various streams, gender, type (students, teachers, etc.), problems being faced by the users in the use of e-resources, fees being charged for every use, and so on. The questionnaire has been tested and modified. The survey work is continuing. It is expected that in about three months time, the survey will be completed. Analysis of the data will commence around September 2010.

Compilation of a Directory

Sometimes universities, research institutions, etc. bring out directories of on-going research projects. The directory will be compiled in the same way as a CAS is compiled. While compiling the directory of on-going research projects you need to take into account the projects that started in the current year and in the previous years. The number of ongoing research projects in a big university at any given time may total 500 or even more. Hence, a directory of this type should be accompanied with an investigator index, guide index, and a subject index.

Self Check Exercise

Note: i)   Write your answer in the space given below.

    ii)   Check your answer with the answers given at the end of this Unit.

3)   Describe the contents of an entry of a directory of on-going research projects.

....

....

....

....

....

2.5   SELECTIVE DISSEMINATION OF INFORMATION

Hans Peter Luhn advanced the idea of selective dissemination of information (SDI) in 1958 which in due course formed the basis for planning a number of SDI systems by various bodies. The mechanised SDI system based on Luhn's design was first implemented in 1959 at the Advanced Systems Development Division of IBM Corporation at Yorktown Heights, New York. The success of

the system emboldened others to follow suit and gradually the system spread all over the world.

In CAS described above a user has to go through the Bulletin to find out the literature relevant to her/his interest. That means s/he is to put some extra efforts and spend some time for the purpose. In SDI, an institution does the job and makes the user aware of the literature, may be free of charge or at a cost. We have seen above that an individual is to scan the entire *Current Awareness Bulletin on Library and Information Science*, vol. 1, no.1 to locate the literature on use studies. In the case of SDI, the individual will not have to do anything, the entire list of articles will be mailed to her/him. S/he will get the intended information practically without any effort or loss of time. Undeniably, the service is of great help to the researchers and others interested in the latest information. Now, let us see how the service is provided.

Components of SDI – The two basic components of SDI are the **user** and the **document**.

The whole purpose of SDI is to make the user aware about the document. For this, first of all a **user profile** and a **document profile** are created.

User Profile – A user profile includes the name, address, and the keyword/s that represent the interest of the user. Suppose, The Head, Education and Training Division, NISCAIR, New Delhi -110067 is interested on literature devoted to 'Internet use'. The Head's profile is given below. In the profile the keyword 'Internet Use' represents the interest of the user. If a user is interested in more than one subject, that should also be mentioned in the user profile. The rest of the data is the address including e-mail id. As per the need more information can be added into the profile. Once the user profile is ready it is incorporated into a user profile file. The user profile may be corrected and needs to be updated from time to time.

User profile of The Head E&T Division

Internet Use
The Head (Name of the Head)
Education and Training Division
NISCAIR
14 Satsang Vihar Marg
New Delhi – 110019
E mail: (e-mail of the Head)

Document Profile – As the documents are coming, their profiles are also created side by side. In the document profile complete bibliographical details of the documents are provided along with the keywords that represent the subject/s of the document. In the document profile you may use any number of keywords as the document demands. Moreover, it is not necessary to prepare an entry as per AACR 2R or any other cataloguing code for document profile. Bibliographical details may be retained as they are in the original. This is because nowadays there are many open sources available in the Web wherefrom data can be downloaded freely to the document profile file. Converting the data in the AACR 2R or any other format will unnecessarily lead to wastage of labour and time. Elements that are missing such as inclusive pages, keywords, etc. should be

added. In the document profiles given below, you may note that the title and the author appear in the same order as they occur in the original title page. Adding an abstract in the document profile is optional. If the abstract is readily available that may be added if time permits. Otherwise, it may be supplied on demand.

Document profile 1

Consortium Use; UGC-INFONET Digital Library Consortium; Use Study

R. H Walmiki, K C Ramakrishnegowda, and K. R. Prithviraj. "Awareness and Use of UGC-INFONET Digital Library Consortium by the Faculty Members of Karnataka State Universities". *Annals of Library and Information Studies* 57.1 (2010): 33-43.Print.

Document profile 2

Electronic Resources; Use Study

K. Natarajan, B. Suresh, P. Sivaraman, and R. Sevukan. "Use and User Perception of Electronic Resources of Annamalai University: A Case Study". *Annals of Library and Information Studies* 57.1 (2010): 59-64. Print.

Document profile 3

Information Need; Use Study

S. Thanuskodi. "Information Needs and Use Pattern of District Court Lawyers of Salem and Erode in Tamil Nadu". *DESIDOC Journal of Library and Information Technology* 30.2 (2010): 59-69. Print.

Document profile 4

Internet Resource; Internet Use; Use Study

V. Ramesh Babu, and M. Natarajan. "A Case Study on the Use of Internet Resource by Research Scholars and Students of Annamalai University. *Indian Journal of Library and Information Science* 4.1 (2010): 5-10.Print.

Document profile 5

Electronic Resources; Use Study

Bulu Maharana, Bipin Bihari Sethi, and Pankaj Kumar Mallick. "Usage of Electronic Information Resources and Services at IIT, Kharagpur Library: A Survey". *Indian Journal of Library and Information Science* 4.1 (2010): 25-33.Print.

It is always advisable to use the same thesaurus or list of subject headings for user profile as well as document profile. It is to be noted that *Library of Congress List of Subject Headings* or *Sears List of Subject Headings* may not serve your purpose because the users' demand in most cases will be on literature on specific subjects and which may not be included in the aforesaid lists. Instead of keywords, class numbers may also be used both in the user profile and document profile. Here, the problem is that in many cases you will not find the class numbers for specific subjects in classification schedules. Leave aside Lotka's law or Bradford's law, even the class number for 'bibliometris' is not available in the latest edition (22nd) of Dewey Decimal Classification.

Matching – In this process user profile file is matched with the document profile file. Usually the matching is done by using a computer. Whenever the computer finds a match, it indicates either giving the serial number of the document or any other code that has been used to uniquely identify the document. While matching The Head's user profile file, the computer will pick up the keyword 'Internet Use' and match this with every document profile file. If it will find a match in document profile 4. The computer will indicate the same.

Notification – The Head will now be notified by e-mail, or any other communication means about the document that has matched her/his profile.

Feedback – Along with the document, a feedback card will also be sent. The user is supposed to fill in the card and send it back to the agency providing the service. The feedback card may be as follows:

Feedback Card

Please return the feedback card after ticking the correct statement.

The information being provided to you is:

1. Fully relevant
2. Partially relevant
3. Irrelevant
4. Backdated
5. Already received

Feedback Analysis

On the analysis of the feedback received, if it is found that the user is not satisfied with the service, then the reason for her/his dissatisfaction will be investigated. There may be several reasons for this. The information supplied may not be relevant, the information may be backdated, or the user has got the information from some other source before.

If the information supplied is not relevant, then it is possible that there is something wrong in the user profile, especially with the keyword/s depicting the user's interest. The user profile given above shows that the interest of The Head is **Internet Use**. Now, Internet is used for various purposes such as chatting, e-mail, searching answer for some queries, entertainment, etc. If the user's interest is limited only to the use of Internet resources and not any other thing, then the keyword **Internet Use** is to be changed to **Internet Resource Use**.

If the user complains that the information being supplied is backdated, then the reason should be found out. May be there is delay in the processing of information or in the dispatch of information. Whatever may be the case, the corrective measures will have to be undertaken.

Users get information from various sources such as authors, fellow colleagues, students, the Web, etc. The moment an article goes to the press, the information about the article may be disseminated to the prospective users. In this case the user will get the information much before it is supplied by the SDI agency.

There is not much difference between 'Web Use' and 'Internet Use'. The user has not given the keyword Web Use. As such, the user may be getting information on Web Use from some other sources. If the user is requested to supply some samples of information that s/he is not getting from the agency, the cause will be found out. The sample may indicate that the user was getting information on the use of Web resources from some other source. Now, this will require change in the user profile, and the list of subject headings or thesaurus. In the list of subject headings or thesaurus, Web Use and Web Resource Use will have to be added and against these subject headings Internet Resource Use as well as Internet Use will have to be shown as Related Terms (RT). Similarly, against the terms Internet Use and Internet Resource Use, Web Use and Web Resource Use will have to be shown as RTs.This type of modification is a continuous process and this is to be done to ensure better service.

Flowchart – The SDI service can be depicted very well with a flowchart as given on the page 46.

SDI – A Computerised Service: Originally SDI was conceived as a computerised service involving thousands of users and tens of thousands of documents. If the number of documents and users is small SDI can be provided manually and at local level.

SDI at a Local Level – Suppose in an organisation there are about a score of users and it receives about a dozen primary periodicals. In such a case the librarian prepares the users profile manually and keeps it on her/his table. While scanning the newly arrived issues of primary periodicals, the moment the librarian finds an article matching with the profile of a user, s/he immediately informs the user by telephone or some other means. Hereafter the user may come to the library for the article or ask for its photocopy.

Self Check Exercise

Note: i)   Write your answers in the space given below.

ii)   Check your answers with the answers given at the end of this Unit.

4)   Write down the contents of a feedback card.

....

....

....

....

....

5) In the organisation you are serving, there are 25 research scholars and it is getting about 40 research periodicals. Describe how are you going to provide the SDI service to the researchers.

....

....

....

....

....

SDI Flowchart
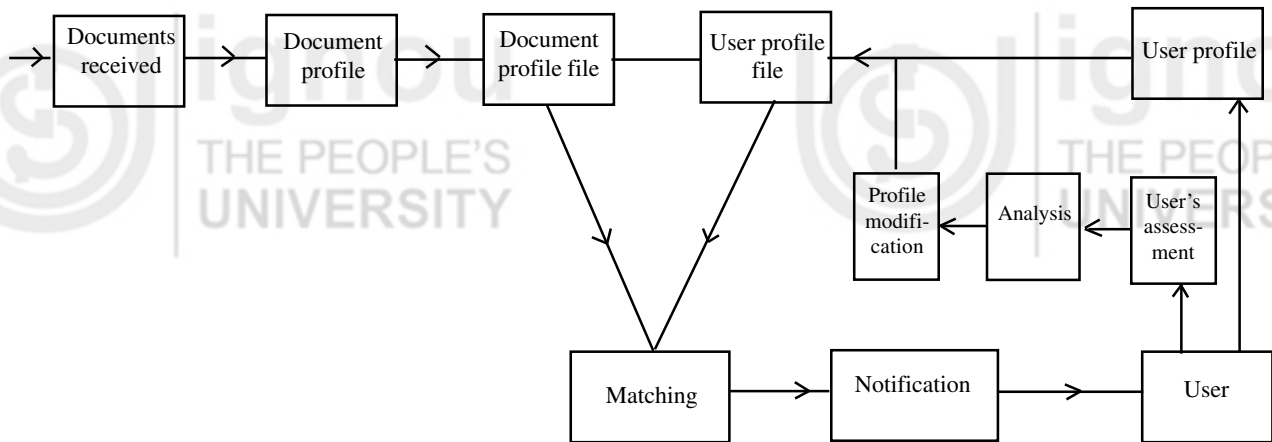
2.6 ADVANCE INFORMATION ABOUT FORTHCOMING CONFERENCES

Every year numerous conferences are held all over the world. These conferences are organised by various organisations and are devoted to one or more subjects. They are usually local, national or international in scope.

In the field of library and information science, a number of national and international conferences are held every year. BLA, IASLIC, ILA, DELNET, INFLIBNET, etc. respectively organise their annual conferences. The conferences organised by BLA annually are generally local in scope, whereas IASLIC, ILA, DELNET, INFLIBNET organise confrerences which are national in scope. TERI, once in two years, organises an international conference. IFLA and many other international organisations also organise annual conferences. About a dozen number of conferences are organised in India on LIS.

Professionals in all fields attend conferences to present papers, exchange ideas with professional colleagues, up-date their knowledge, etc. For presenting a paper in a conference, generally you need to send an abstract well in advance on or before the stipulated date. Based on the abstract, the organisers decide whether or not to accept the paper. If the answer is on the affirmative, then the full-length paper is to be submitted within the stipulated date.

All these factors demand that the information about forthcoming conferences should be provided well in advance to the professionals. That is why, many publishers bring out serial publications listing the forthcoming conferences. If there is a demand, then such publications may be subscribed by a library.

In many cases, local and national conferences organised by developing countries are not recorded in those serial publications. As a result libraries should bring out serial publications listing the forthcoming conferences.

Compilation: For the compilation of a list of forthcoming conferences, you need the following:

i) **Information about forthcoming conferences**

Organisers of the conferences send out leaflets, e-mails, circulars, letters, and various other materials relating to the conference they are going to hold in future. Many organisers also place the information on the Internet. A page of the information brochure of the conference titled LIS-edu-Vision 2010 and an e-mail on the forthcoming International Conference on Digital Libraries and Knowledge Organization (ICDK 2011) are given on the following pages as examples.

ii) **Collection of Information**

The moment information is received in any form about a forthcoming conference, it is to be placed in a file. The entire information is to be sorted and used for the publication.

iii) **Scope**

Local, national, and international – all conferences are to be included. Announcements relating to international conferences are made four years in advance. Hence, the coverage in terms of time should be up to four years. If you are compiling the publication for the month of June 2010, then you can cover conferences up to May 2014.

iv) **Entry**

The information required by a professional for a forthcoming conference is as follows. Hence, an entry relating to a conference should include the given items.

a) Name of the conference

b) Date of the conference

c) Venue of the conference

d) Date of submission of the abstract

e) Date of acceptance of the abstract

f) Date of submission of the full-length paper

g) Date of payment of the registration fee

h) Arrangement for accommodation

i) Arrangement for transport

j) Contact information: Name of the person, postal address, e-mail address, phone number – all are to be given. If there are different contact addresses for different activities such as registration and accommodation, they are also to be given.

k) Other information if any related to weather at that time of the conference, type of clothing needed, local sightseeing, map of the city, important places to be visited,etc. can be added.

Front Page of the Brochure of the Conference

Conference Information through E-mail

Dear Colleague,

We are pleased to announce the call for papers & registration of the forthcoming **International Conference on Digital Libraries and Knowledge Organization (ICDK 2011)** to be jointly organized by Management Development Institute (MDI) and Indian Association for Special Libraries & Information Centres (IASLIC) during **14-16 February 2011**.

Background & Objectives

The advancement of Digital Library technologies provide an effective medium for Library & Information professionals to reach out to the users as never before. Same time, the rapid proliferation of the digital resources poses an unprecedented challenge to information professionals in generating efficient information services.

Libraries and information centres have long been involved in systematically organizing knowledge using techniques such as indexing and classification. These traditional knowledge organization tools lay the foundation for modern knowledge organization languages in the digital era. Knowledge organization systems can improve the organization of digital libraries and facilitate better access to their content. In a technology driven world, libraries play a crucial role in the fostering of knowledge for development.

The goal of the conference is to bring together librarians, information engineers, educators as well as experts and professionals in other related fields, from both India and aboard, to exchange ideas and share research findings about digital libraries and knowledge organization. The conference will generate valuable ideas for advancing services for knowledge creation through research.

The conference will focus on the theoretical and methodological issues involved in the qualitative, longitudinal study of the developers, users, policy makers, etc., involved in the development of digital libraries. It will provide a forum where these theoretical and methodological interests and insights may be advanced, exchanged, and debated, and where experiences with differing technologies, contexts, and methodologies may be compared and contrasted.

The specific objectives of the conference are:

To provide a☐ forum for scholars from different fields and backgrounds to share their views and perspectives on how to advance research in the area of digital libraries and knowledge organization tools and techniques.

Identifying☐ best practices in all the spheres of digital library development and knowledge organization.

To provide☐ strategic directions for the development of digital libraries

To prepare a☐ sustainable knowledge organization framework for digital library development

Themes (but not limited to)

- Digital Libraries Development
- Tools and Techniques for Managing Digital Repositories
- Digital Resource Management Strategies
- Evaluation of Digital Libraries
- Content Development: Tools and Techniques
- Cultural Issues of Online Services
- Technology Issues in Online Services
- Standards and Specifications for Digital Objects
- Metadata Standards, Interoperability and Crosswalks
- Case Studies of Digital Libraries and Institutional Repositories

Conventional Products and Services	• Multilingual Digital Libraries
	• Digital Preservation Strategies
	• Web Retrieval Tools and Strategies
	• Information Retrieval in Indian Languages
	• User Interface and Patron Interactions Tools
	• Open Source Software Tools for Digital Library Development
	• Open Access Initiatives, Open Access Repositories
	• Open Access for Scholarly Contents
	• Information Management Using Web 2.0/3.0 Technologies
	• Social Networking Tools for Information Services
	• Knowledge Organization Techniques
	• Knowledge Representation Models
	• Emergent Techniques for Search Algorithms and Context Sensitive Indexing
	• Semantic Web Technologies for Knowledge Representation and Management
	• Ontologies and Approaches to Building Ontologies

Important Dates:

Submission of full paper	: September 30, 2010
Workshop/tutorial proposal	: August 10, 2010
Notification of acceptance with reviewers' comments	: October 30, 2010
Submission of the final paper	: November 30, 2010

For further information about the conference, please visit the conference site at http://www.mdi.ac.in/ICDK/Home.html

---

v) **Compilation mode**

Compilation should better be done using a computer. The entries should be arranged chronologically. The conferences which are going to be organised sooner will come first and later will figure afterwards. Once the compilation is over, it takes the form of a publication. Now, it can be easily placed on the organisation's website, if need be print-outs can also be taken.

vi) **Periodicity**

If the periodicity is once a month it will be quite satisfactory. It can be increased to bimonthly or quarterly in case the number of conferences is less.

vii) **Dissemination**

The publication can be e-mailed to the members who have e-mail ids. The print-outs can be sent by post to others.

viii) **Updation**

For such a publication, updation is a continuous process. In a computerised format updation is very easy. The conferences which are occurring in the present month will be deleted while bringing out the next issue, and conferences of one more month will be added at the end. Suppose, in the present issue you have included conferences of July 2010 to June 2014. In the next issue you will include conferences of August 2010 to July 2014.

2.7 SUMMARY

While discussing current awareness service, its importance, definition and scope, types, as well as characteristics have been highlighted.

Title announcement services are of varied types. Of these *Current Contents* type is possibly most popular. Steps involved in its compilation have been detailed so that depending on the need one can start the service. The advantages and disadvantages of the service have also been pointed out. The service can also be provided by arranging entries under subject or class number. How this can be done has been discussed.

Announcement of research in progress more often than not appears in the form of a directory. How it is to be compiled and what will be the components of an entry have been detailed.

The history of SDI service has been outlined, and its various components have been described in detail. How SDI service can be provided at local level without the help of a computer has also been highlighted.

While dealing with list of forthcoming conferences, the importance of such a publication has been pointed out and collection of information, scope of the publication, components of an entry, mode of compilation, periodicity, mode of dissemination, and updation discussed.

2.8 ANSWERS TO SELF CHECK EXERCISES

1) The salient characteristics of current awareness service are as follows:

i) It is basically an announcement service brought out usually in printed form.

ii) Speed is the essence of CAS. The periodicity of the service usually varies from weekly to monthly.

iii) It aims to serve or generate in researchers current approach to information.

iv) It does not answer any specific query but provides a broad view of recent developments.

v) The service is usually on a broader area.

vi) The service is a formal channel and supplements the information received through informal channels.

vii) The service is meant for scanning.

viii) The service is for temporary use only.

2) The advantages of *Current Contents* type service is that it can be brought out very quickly, with less cost and labour, and practically without any editing. It serves the purpose of the users quite well. They are just to scan through the pages to see whether any paper of their interest has appeared recently. Suppose somebody is interested in the articles of library classification. S/he may find articles of Dewey Decimal Classification, Colon Classification, classification in general, etc. It is possible that in some issues of this type of service there may not be any article on classification.

If an issue of the service contains many pages, say around 50 or more, then it takes time to find out the articles of interest. Moreover, in the *Current Contents* type service there is little scope for editing. At times, because of poor reproduction, some titles become unreadable. These are some of the disadvantages.

3) An entry in the directory of research in progress contains the name/s of the investigator/s, address/es of the investigator/s, title of the research project, date of starting of the research project, the date when the project is likely to be finished, and the abstract. For research projects undertaken for obtaining degrees such as PhD, the names of the degree and the guide/s are also given.

4) The contents of a feedback card will be as follows:

    Please return the feedback card after ticking the most relevant statement.

    The information being provided to you is:
    1) Fully relevant
    2) Partially relevant
    3) Irrelevant
    4) Backdated
    5) Already received

5) First of all, I shall make a list of all the 25 research scholars. The list will contain the names of the researchers, their areas of interest, their telephone numbers and e-mail addresses. Within a short time I hope the areas of interest of all the researchers will be in my memory.

    The library receives 40 research periodicals, of which one or two will be weekly and the rest will be monthly, bimonthly, quarterly, etc. It is expected that in a day two to three issues will be received. After recoding is done, I shall go through the contents of the issues, and inform the researchers as I come across the articles relevant to their interests. From time to time I shall gather their feedback, and will modify their profile as per the need.

2.9 KEYWORDS

Core Journal	:	A journal fully devoted to a particular field of study. For example, *Annals of Library and Information Studies* is a core journal in the field of library and information science.
Formal Channel	:	Conventional channel such as a printed publication.
Informal Channel	:	Non-conventional channel such as correspondence.

2.10 LIST OF ABBREVIATIONS

AACR	:	Anglo-American Cataloguing Rules
BLA	:	Bengal Library Association
CAS	:	Current Awareness Service
CCC	:	Classified Catalogue Code

DELNET	:	Developing Library Network
DESIDOC	:	Defence Scientific Information and Documentation Centre
IASLIC	:	Indian Association of Special Libraries and Information Centres
IFLA	:	International Federation of Library Associations and Institutions
ILA	:	Indian Library Association
INFLIBNET	:	Information and Library Network
INSDOC	:	Indian National Scientific Documentation Centre
ISSN	:	International Standard Serial Number
LIS	:	Library and Information Science
NISCAIR	:	National Institute of Science Communication and Information Resources
SDI	:	Selective Dissemination of Information
UGC	:	University Grants Commission
Web	:	World Wide Web

2.11 REFERENCES AND FURTHER READING

Guha, B. "Current Awareness Services" *Training Course in Documentation and Information Services – Course Material*. New Delhi: INSDOC, 1976. Paper IV.4. Print.

---. "Information Services and Products – Different Types". *Training Course in Documentation and Information Services – Course Material*. New Delhi: INSDOC, 1976. Paper IV.1. Print.

---. "Services from a Branch Information Centre – Selective Dissemination of Information (SDI)". *Workshop on Planning of Branch Information Centres in CSIR*. New Delhi: INSDOC, 1975: 35-39. Print.

Luhn, H. P. "A Business Intelligence System". *IBM Journal of Research and Development* 2.4 (1958): 314-319. Print.

---. "Selective Dissemination of New Scientific Information with the Aid of Electronic Processing Equipment". *American Documentation* 12.4 (1961): 131-138. Print.

UNIT 3 ABSTRACTING, DIGEST AND NEWSPAPER CLIPPING SERVICES

3.0 OBJECTIVES

After reading this Unit, you will be able to:

- discuss about abstracts and abstracting service;

- prepare an abstract;

- explain digests and a digest service;

- prepare a digest on any given topic;

- describe newspaper clipping service and its types; and

- organise a newspaper clipping service in a library and information center.

3.1 INTRODUCTION

Abstracting service, digest service and newspaper clipping service are all secondary services and are highly useful for the users. All these have been described in Unit 9 of BLI-222 course from which you will get a broad idea about all these services. As part of your job in a library, you may often prepare

54

abstracts, digests or organise newspaper clipping service. The object of this Unit is to equip you to do all these jobs. Surely, by going through this Unit, you will not become an expert overnight, but will get the guidelines whereby you will not be unprepared when you are assigned any of these jobs.

3.2 ABSTRACTING SERVICE

3.2.1 Definition

An abstracting service is generally a bibliographical service (in many cases commercial) that provides bibliographical details of a publication along with the abstract of the same. In most cases it is available in print form as well as in digital form. In print form it appears at regular intervals, i.e. weekly, fortnightly, monthly, etc. as a periodical. Entries in the publication are arranged under broad subject headings or class numbers. Each abstracting service provides a number of indexes such as issue index, volume index, author index, subject index, etc. In database form, it is generally updated daily. An abstracting service not only publishes an abstracting periodical but also various by-products. For example, Chemical Abstracts Service not only brings out *Chemical Abstracts* [from 1st January 2010, print version has been discontinued] but also generates databases like CAplus, CAS Registry, and products like STN (Scientific and Technical Information Network), SciFinder, and CASSI (Chemical Abstracts Service Source Index).

An **abstracting periodical** is a periodic publication having a fixed frequency which may be monthly, quarterly, etc. It contains bibliographical details of a document along with its abstracts which are arranged in some systematic order. If you go through *Indian Science Abstracts* you will get a good idea about an abstracting periodical.

Necessity of an abstracting periodical or service. To understand this point, let us take a simple example. Suppose, a scientist is working on the topic 'acid rain'. A large number of articles are appearing every year in various research journals, review journals, conference proceedings, collected works, books, etc. on the topic 'acid rain'. There might be one or two theses also on the subject. All these documents have been generated in different parts of the world in various languages. *Chemical Abstracts* covers publications in 50 languages of the world. This gives an idea as to the number of languages in which chemical publications are appearing.

It is impossible for the scientist to know all the sources where the documents/ literature on the topic have appeared in the world. The scientist will not know all the languages in which articles and other publications have appeared. In the ocean of bewildering variety of publications, the scientist will be a sailor without a compass. Abstracting and indexing services of the world have appeared to save scientists and researchers from such an awkward situation. Most of the indexing and abstracting services in the world are in English. Whatever the language in which an article has been published, it is very likely that its abstract will be available in English. If the scientist knows English language well, her/his problem is solved to a large extent. As an international indexing or abstracting service tries to cover all important periodicals from the world, you do not have to search individual libraries for the articles. You will get the abstracts of most of those articles from one source. Going through the abstract, if you feel that the

whole article is necessary then you may search the library or the Internet to get the full-length article.

For retrospective searches, abstracting services and periodicals both in print and digital forms are found to be very helpful. The searches can be carried out quickly in digital form compared to print form. For compilation of bibliographies, writing review articles, etc. abstracting services and journals are heavily used.

3.2.2 Scope

An abstracting service/journal is usually devoted to a subject. For example, *Indian Science Abstracts* is devoted to science, *Medicinal and Aromatic Plant Abstracts* is devoted to medicinal and aromatic plants, etc. An abstracting service/journal may be national or international in scope. For example, the scope of *Indian Science Abstracts* is national and that of *Chemical Abstracts* is international. The scope also varies with respect to coverage of documents. *Chemical Abstracts* covers journal articles, patents, books, conference papers, government research reports, dissertations, etc. On the other hand *Indian Science Abstracts* covers mostly journal articles. In respect of languages also the scope varies. *Chemical Abstracts* covers documents in more than 50 languages. *Referativnyi Zhurnal*, the gigantic Russian abstracting periodical used to cover documents in more than 60 languages. On the other hand our *Indian Science Abstracts* covers articles only in English with rare exceptions as there are very few research articles in Indian languages.

3.2.3 Abstract

Information has a remarkable property that it can be condensed. An abstract is basically a condensed form of the content of an article, a book or the like. We all know what summary is. A summary is also a condensed form. Usually it is longer than an abstract. Depending on the need, the length of an abstract varies from a single line to several pages. This has given rise to different types of abstracts which we shall discuss in the next section of this Unit.

Usefulness of abstracts – Abstracts are found to be useful in many ways as indicated below (*ISA Manual*).

i)   Abstracts facilitate the selection of papers to be read by researchers. Due to the huge output of literature in science and technology and many other areas of knowledge, it is no more possible for the researchers to keep themselves abreast of the developments in their field by going through a few journals accessible to them.

ii) They remove the language barrier to a great extent as has been pointed out already.

iii) In many cases an informative abstract eliminates the need for going through the original article.

iv) For writing review articles, preparation of class notes for Masters and M Phil classes, etc. abstracts are of great use.

v)   For selection of articles for a conference, in many cases, extended abstracts are necessary.

3.2.4   Types of Abstracts

Abstracts are of various types. some of them are: i) titular abstract, ii) annotation, iii) indicative or descriptive abstract, iv) informative, informational or comprehensive abstract, v) extended abstract, vi) slanted abstract, vii) auto abstract, viii) author abstract, ix) subject-specialist-prepared abstract, x) professional-abstract or-prepared abstract, etc. We shall briefly describe all these types of abstracts one by one.

i)   **Titular Abstract:** It is also called title-only abstract. In the case of many articles, titles are self-explanatory. In such cases, just the citation is given without providing any abstract. In the case of review articles, generally in the abstract section only the number of references is mentioned. Titular abstracts are also provided for such articles which are just popular accounts of some topic.

   Example:

   ```
   Bandyopadhyay, B. "Select Bibliography of Forewords". [in Bengali].
   Granthagar 50.1(2000): 7-17. Print.
   ```

ii) **Annotation :** It is a clause or a sentence added to amplify the title.

   Examples:

   ```
   Gopinath, M. A. "Seamless Information Environment and Seamless
   Infrastructure". Vidyasagar University Journal of  Library and
   Information  Science 7-9(2002-2006): 76-78. Print.

   Presents a trend analysis and normative features  of  seamless
   information environment and seamless infrastructure.

   Bandyopadhyay, B. "Select Bibliography of Forewords". [in Bengali].
   Granthagar 50.2(2000): 5-13. Print.
   Concluding part of the bibliography.
   ```

   In the above two abstracts, the first one consists of a line and a second one a phrase.

iii) **Indicative or Descriptive Abstract :** Lengthwise it is shorter than an informative abstract and generally longer than an annotation. At times it becomes difficult to distinguish between an annotation and an indicative abstract. The number of words contained in the indicative abstract is usually 20 to 50. The purpose of the abstract is to inform the user whether or not the article is relevant to her/his field of interest.

   Example:

   ```
   Prasad, K. N. "A Decade of Information Studies". Information  Studies
   11.1(2005): 1-4. Print

   Analyses the articles published in Information Studies during 1995
   to 2004. Outlines the objectives of the journal and presents a table
   showing the coverage of various subjects over the 10 volumes.
   ```

   This abstract would have been an informative abstract if the objectives of the journal and subjects covered in ten years had been mentioned.

iv) **Informative, Informational or Comprehensive Abstract :** This type of abstract is usually bigger than an indicative abstract. In terms of words it can go up to 250 or more. At times it may be less than 100 words also. The purpose of this type of abstract is to reflect all the salient features of the document. Many a time this type of abstract obviates the need for going through the original. Just see the following abstracts.

```
Sood, S. P. English-Hindi Dictionary of Technical Terms in Library
and Information Science. Jaipur: Raj Publishing House, 2004. iv,
165p. ISBN 81-87248-25-4. (HB). Rs. 325. Print.
```

```
The dictionary lists about 4,000 terms in letter-by-letter alphabetical
order giving their Hindi equivalents. The terms have been extracted
from about 100 published books and periodical articles in Hindi.
Some university/UGC question papers have also been used for this
purpose. In some cases more than one Hindi equivalents are listed.
Also includes some personal names and abbreviations, such as B C
Vickery and FID. Some popular abbreviations such as IFLA, LCSH, etc.
have only been transliterated in expanded forms in Devanagari script.
```

This is an informative abstract of a book providing all the salient features of the dictionary though the number of words in the abstract is just 80. The annotation for this book would be in just a small sentence, i.e. Lists about 4,000 terms.

```
0285   Thapa, Neelam and Sahoo, K. C. "Problems and Prospects of
Automation with special reference to Special Libraries in Jabalpur".
Iaslic Bulletin 49.3(2004):171-181. Print.
```

```
Reports the findings of a survey conducted to study the present
status of automation in special libraries of Jabalpur District in
Madhya Pradesh. Aims at understanding and analyzing the various
problems faced by the authorities and the staff during the process
of automation of the library and suggests ways and means to overcome
these problems. It also aims at analysing the prospects of automation.
The methodology adopted for the present study is survey using a
structured questionnaire. The findings show that only 60 per cent
of the special libraries have opted for automation. The lack of
computer trained professional staff, hesitancy and lack of attitude
towards automation, unsatisfactory library software are some of the
major obstacles  for slow progress. The special libraries in Jabalpur
are still in a state of infancy in respect of automation. However,
60 per cent of special libraries opting for automation, shows that
the libraries have a mind to adapt to new changes and that the other
libraries will follow suit.
```

This is an informative abstract of a journal article. You can notice that the abstract provides the venue of the study, its objectives, methodology followed for conducting the study, findings and conclusion. Abstracting a research article is comparatively easy as the writing is systematic and one can easily extract the material for abstracting.

v) **Extended Abstract:** Often the organisers of conferences demand an extended abstract of the article which the author intends to present in the projected conference. In terms of words the length of the abstract can go up to about 600 words or more. The abstract may include title of the article, name/s of the author/s, address of the author/s, introduction, the objective of the study, the methodology to be followed, hypotheses, if any, results already obtained, study that remains to be done, and finally references. All these taken together goes up to 600 to 1000 words. In some cases, the range is given between 500 to 1000 words excluding references. Given below is the sample of an extended abstract.

```
******************************************************************
```

Growth of Scientific Societies in India (1784–1947)

B K Sen
Address………………
E mail…………………

Introduction

Asiatic Society was founded by Sir William Jones in 1784 at Calcutta. This was the first learned society formed in India. Though the object of the Society was to conduct research in all areas of Orientology, the members of the Society carried out splendid research work practically in all areas of science. From 1784 to 1947, several hundred scientific societies have been formed in India. During the period many of them flourished and a great number perished. Information available for many of the dead societies is scant. In some cases nothing is available except the name. If some action is not taken now, then it will be extremely difficult to depict a complete scenario of Indian scientific societies in future. Keeping this in mind the project has been undertaken.

OBJECTIVES

The objectives of the study are:

i) **to portray** the scenario of scientific societies that emerged and flourished in India from 1784 to 1900 and acted as very powerful media to promote the development of scientific education, scientific research, application of science, and scientific culture in India.

ii) **to enlist** a) all scientific societies that appeared, flourished, and became defunct and to provide a brief description of all of them; and b) such general societies as were having at least one of the objectives related to science (e.g. *Asiatic Society*)

iii) **and to enable** a) a librarian or information scientist to trace any scientific society that emerged during the period and obtain adequate information about it; and b) a historian of science to trace and obtain necessary historical facts relating to the establishment, activities, development and in some cases closure of such societies.

SCOPE

Within the confine of this study the term 'society' means 'an organization or club formed for a particular purpose or activity' [COD] and encompasses all institutions called as associations, societies, and sometimes as academies, institutes and so on, and usually registered under Societies Registration Act (XXI of 1860) of India. Societies that started before this date and also those after this date not covered by this Act have also been included.

The terms 'scientific' includes science in general; natural history; conservation; mathematics, astronomy; surveying and geodesy, physics, chemistry; mineralogy; geology; meteorology; marine science; paleontology; anthropology; archaeology; economic biology; microbiology, ecology; genetics and plant breeding; microscopy; botany; zoology including entomology; industry; medicine including anatomy and physiology, health and hygiene; mental health; pharmacology, systems of medicine like allopathy, homeopathy, and Ayurveda; pathology including cancer, malaria, etc., clinical medicine, dentistry, nursing, nutrition, obstetrics and gynaecology, pediatrics, ophthalmology; hospitals; engineering including civil, electrical and mechanical, mining and metallurgy including coal, gold, iron, mica and so on, construction, roadways, railways, irrigation and telegraphy, aeronautics, architecture, automobiles; agriculture and food including crops like rice, wheat, cotton, jute, indigo, etc; horticulture and gardening, forestry, animal husbandry and veterinary science, dairy science, poultry; printing, food technology; oil technology, pulp and paper, chemicals like salts and explosives; building and architecture; and geography. Societies of such peripheral areas like museums and photography have also been covered. Even religious and

literary societies that had some scientific activities have also been covered.

The geographical limit of the coverage is confined to British India which now forms India, Pakistan and Bangladesh.

As is evident from the title, the period covered is 1784 to 1947 inasmuch as the year 1784 heralded the happy birth of the '*Society, instituted in Bengal, for Inquiring into the History and Antiquities, the Arts, Sciences, and Literature, of Asia*' (*afterwards* known as Asiatic Society) and 1947 sounded the end of the British period of Indian history.

METHODOLOGY

1. First of all, the preparation of a comprehensive list of societies that emerged, flourished and in some cases became defunct.

2. Secondly, to gather information relating to its date of establishment, founder/s, location, address if it is existing till date, objectives, functions, achievement, etc.

3. The third step involved is cleaning of the data, i.e. to make all the components of each society, to the extent possible uniform.

4. The next step will be to arrange the entries in chronological order according to the date of establishment of the societies.

5. Editing and finalization of the entries will be the fifth step.

6. The sixth step will be introduction, objectives formulated, scope defined, methodologies followed, and finally the conclusion drawn.

7. Preparation of the indexes will be the last step.

Work Done So Far

In all about 400 societies have been traced. When the investigation is complete, it is expected that the number might touch 500, if not more. The details of more than 50 societies have so far been collected.

References

i) *Indian Year Book 1914–1947/48.*

ii) Neelameghan A. *Development of Medical Societies and Medical Periodicals in India, 1780 to 1920.* Calcutta: EASLIC, 1963.

iii) Rahman A, Sen N, Rajagopal N R. *Scientific Societies in India.* New Delhi: Council of Scientific and Industrial Research, 1964.

iv) Sen B K. *Growth of Scientific Periodicals in India (1788–1900).* New Delhi: INSA, 2002.

v) Sen B K. *Growth of Scientific Periodicals in India (1901–1947).* New Delhi: INSA, 2005

****

The extended abstract looks more or less like a research article without an abstract since this itself is an abstract. This extended abstract contains about 800 words.

vi) **Slanted Abstract :** "An abstract written to represent a specific portion of a document, or a particular perspective on its content, usually for the benefit of a specialized audience for example, an abstract of a scientific paper on the effects of global warming on climate, written for the benefit of the petroleum industry" (Reitz).

Let us take the following article as an example.

Suresh Kumar, K. C. Garg, and Bharvi Dutt. "Indian Scientific Output as seen through *Indian Science Abstracts*". *Annals of Library and Information Studies* 56(2009): 163–168.Print.

This article portrays the output of India in all fields of science and technology. Commonwealth Agricultural Bureau (CAB) brings out abstracting services covering broadly all fields of agriculture and allied disciplines such as agriculture, forestry, animal husbandry and fisheries. Suppose, an abstractor is to prepare a slanted abstract for CAB Abstracting Services for this, the abstractor is to select only those data that pertain to the aforesaid areas and prepare the abstract. The abstract of the article oriented to agriculture and related disciplines will be as follows:

Indian Science Abstracts of the year 2006 covered 18,224 papers of which agriculture, forestry, animal husbandry and fisheries accounted for 4821 papers constituting 26.4 per cent of the whole output. Of the total S & T output of India the share of agriculture and related disciplines is the highest. The institutions who have contributed major share of these papers are Punjab Agricultural University, CCS Haryana Agricultural University, Indian Agricultural Research Institute, Tamil Nadu Agriculture University, Bidhan Chandra Krishi Vishwavidyalaya, Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Indian Veterinary Research Institute, G B Pant University of Agriculture and Technology, University of Agricultural Sciences, and so on. All these institutions have accounted for 100 or more articles each.

From the same paper an abstract can be prepared for *Chemical Abstracts, Physics Abstracts*, etc. The data relating to individual subjects will differ in all the cases.

vii) **Auto Abstract:** An auto abstract is a computer generated abstract. It depends on the frequency of the keywords appearing in the text. The computer searches the text and finds out the most frequent keywords. Using the most frequent keywords found in the document, auto abstract is given the final shape.

viii) **Author Abstract:** An author abstract is prepared by the author herself/ himself. If you go through journals like *Annals of Library and Information Studies, IASLIC Bulletin*, etc. you will find author abstracts with all original articles. You may note that *Indian Science Abstracts* more or less solely depends on author abstracts. Most other abstracting services also depend on author abstracts heavily. Before author abstracts are included in the abstracting services they are edited.

ix) **Subject-Specialist-Prepared Abstract:** These abstracts are prepared by subject experts. Some abstracting services have a panel of abstractors who specialise in various subjects. According to their specialisation they are assigned articles for abstracting.

x) **Professional-Abstract or-Prepared Abstract:** There are abstractors who prepare abstracts on various subjects irrespective of their specialisation by virtue of their vast experiencing in the field. Abstracts prepared by professional abstractors are also generally dependable.

3.2.5 Abstracting

For abstracting, first of all you have to decide what type of abstract you are going to prepare. Having decided that, you can proceed further. Preparation of abstracts for research articles, books, theses, etc. is easy as the contents of these documents

are well-structured. On the other hand popular articles in magazines and periodicals as well as writings in newspapers and specifically editorials and speeches pose difficulties for abstracting. Here, we will discuss how an informative abstract of an article is prepared. The process involves three distinct steps – i) Identification of key information, ii) Organisation of the information, and iii) Writing of the abstract.

Step 1 – Identification of Key Information

For this purpose you have to systematically follow the procedure given below:

i)   Read the introductory paragraphs of the paper carefully. Usually these paragraphs provide information about the objectives, scope and hypotheses (if any) of the study. Even if this is not a research paper the introductory paragraphs provide some information which prove to be valuable for writing the abstract.

ii) Many papers include author abstracts. Sometimes the author abstract with a little bit of modification can be shaped into a good abstract. Quite often you may find that an author abstract is giving a long introduction before describing the actual study. In such a case you are to just leave out the introduction and take the remaining part as the abstract for your purpose.

iii) The summary and the conclusion given at the end of the paper generally reveal the author's findings and recommendations, if any. Hence, they should be noted.

iv) The text should be scanned for finding out the methodology, materials and/ or equipment used, useful data, and any other valuable information.

v)   The important phrases and passages should be marked and useful information noted on the margins.

NB – The above procedure will not be helpful in the case of non-research articles like editorials, newspaper articles, speeches, etc. In such cases you are to go through the article paragraph by paragraph and note down the key points of every paragraph.

Step 2 – Organisation of the Information

In novels and short stories, sometimes you see that the author is starting with the ending, and then through flashback describing the whole incident. In an abstract you cannot do that. In an abstract of a research paper you have to systematically describe the objectives, scope, hypotheses if any, methodology, findings, conclusion, and recommendations, if any.

The key points of a non-research paper should be organised logically so that the entire abstract provides a holistic view. Suppose, a minister in her/his speech has touched upon several areas of rural development in the current five year plan. All those areas should be highlighted in the abstract.

Step 3 – Writing of the Abstract

You might have noticed that an abstract has two distinct segments. The first segment is the citation, and the second segment is the abstract proper. First, we take up the 'citation'.

1) **Citation**

In the citation, bibliographical details of the document are given. For this purpose you are to follow a style manual. If your organisation is already following a style manual, you are to follow that. If not, then you may follow *Style Manual* of UNESCO, *MLA Handbook for Writers of Research Papers*, or any other manual. Some general dictionaries also provide 'style manual' as an appendix. You can check the general dictionaries to see if any of them contains any style manual. If so you can follow that.

Some representative entries following *MLA Handbook* 7th edition are being given below for most commonly used documents.

Books

Booth, P. F. *Report Writing.* 2nd ed. Kings Ripton: Huntinton, 1991. Print.

Chandler, B. E. *Technical Writer's Handbook*. Ohio: American Society for Metals, 1983. Print.

Gerson, S. J., and S.M. Gerson. *Technical Writing, Process and Product*. 2nd ed. New Jersey: Prentice Hall. 1997. Print.

Jordon, S., ed. *Handbook of Technical Writing.* 2 vols. 1971. Print.

Jordon, S., J.M. Kleiman, and H.L. Shimberg . *Handbook of Technical Writing Practices.* 2 vols. New Jersey: Wiley, 1971. Print.

Krishan Kumar. *Reference Service*. 2nd rev. ed. New Delhi: Vikas, 1980. Print.

Conference Papers

Anil Kumar, M. P., and S.Ashok. "Real Time Usage Analysis of Online Resources - A Case Study of a Digital Library". *International Conference on Digital Libraries,* 2004 : [*Proceedings*]. Vol.2. New Delhi: TERI, 2004. 957-961. Print.

Bavakutty, M., and K.Mohamed Haneefa. "Online Information Resources in Special Libraries in Kerala". *National Convention on Library and Information Networking (NACLIN 2004), Pune: Proceedings*. Ed. H. K. Kaul, and S. K. Patil. New Delhi: DELNET, 2005. 62-70. Print.

Pirie, N. W. "Note on the Simultaneous Publication of Papers of Two Different Levels of Completeness" *Royal Society Scientific Information Conference*, 1948. London: Royal Society, 1948. 419-422. Print.

Dictionaries

Satija, M. P. *A Dictionary of Knowledge Organization*. Amritsar: Guru Nanak Dev University, 2004. Print.

Tracey, William R. *The Human Resources Glossary (English).* 3rd ed. Florida: St. Lucie Press, 2004. Print.

Encyclopaedias

Odhams Colour Library of Knowledge. London: Hamlyn Publishing, 1970. Print.

Journals

Annals of Library and Information Studies. New Delhi: NISCAIR, 1954-. Print.

Annual Review of Information Science and Technology. Maryland: American Society of Information Science and Technology, 1966-. Print.

Journal Articles

Biswas, S.C. and S. Mandal. "Library and Information Science (LIS) Research in India vis-à-vis Research Methodology in LIS Curricula". *Vidyasagar University Journal of Library and Information Science* 6 (2001): 3-19. Print.

Kannappanavar, B. U., and M. Vijayakumar. "Fifty Years of LIS Research in India: Trends and Developments". *SRELS Journal of Information Management* 37.4 (2000): 267-300. Print.

Natarajan, K., B. Suresh, P. Sivaraman, and R. Sevukan."Use and Use Perception of Electronic Sources in Annamalai University: A Case Study". *Annals of Library and Information Studies* 57(2010): 59-64.Print.

"Swine Flu". *Readers Digest* 50.8 (August 2009):148-161. Print.

Newspaper Articles

Bagga, Bhavan. "Son's Testimony Seals Father's Fate". *Mail Today* 3.4 (19 November 2009):16. Print.

Thesis/Dissertation (**unpublished**)

Das, Anup Kumar. "An Evaluative Study of Some Selected Libraries in India Undergoing the Process of Digitization". PhD thesis. Jadavpur University, 2008. Print.

2) **Abstract Proper**

You already know that an abstract of an article is likely to contain some of the following components – objectives, scope, hypotheses, methodology, findings, conclusions, and recommendations. It is to be noted that in all articles you will not find all the components.

See the following example:

```
Jena Dhal, Pushpanjali, and Ranjit Kumar Das. "Accessibility of Information
to Semi-urban Sector of Mayurbhanj District: A Community Analysis".
National Seminar of IASLIC, 19th, 2000, Bhopal: Library and Information
Profession at the Crossroad. Papers. Calcutta: Iaslic, 2000. 59-66.Print.
```

```
Reports the findings of a community survey based on a questionnaire-cum-
interview method of Balarampur area of Baripada Municipality of Mayurbhanj
district of Orissa, which was conducted to find out (a) socioeconomic
attributes,(b) reading habits and utilization of leisure time, (c)
information provision pertaining to different day-to-day problems and
(d) knowledge and attitudes of the respondents towards the library
services. Significant amount of literates were aware of the direct
source of information for the situations related to price rise, employment,
voters' list, local information in general, whereas significant amount
of illiterates were aware of the direct sources for voters' list, local
information in general. Among the indirect sources of information
neighbours' topped the list, next to it, "old persons" of the locality
in both the group of literates and as well as illiterate respondents.
```

```
Other common indirect information providers were, teacher, nana/pujari,
betel shop etc. Most respondents visited cinemas during their leisure
time. Many of them utilized their leisure time by gossiping.
```

NB- The abstract given above shows the methodology followed, scope, objectives and the findings. Other items are missing in the abstract. While writing the abstract, keep in mind the following points:

i) Write the abstract in fluent and easy-to-understand English.

ii) Avoid ambiguity in the writing.

iii) Avoid long and highly complex sentences.

iv) Avoid jargons and colloquial uses.

v) Avoid paragraphing. Generally an abstract is written in a single paragraph.

vi) Expand abbreviations unless it is internationally well-known and unambiguous.

vii) Use mathematical, chemical and other symbols.

viii) Condense the sentence to the extent possible without affecting the comprehensibility. Instead of writing - 'The author explores the reading habit of rural folk' write 'Explores the reading habit of rural folk'. You may note that the abstract given above starts with the word 'Reports ….'it does not say 'The article reports …'

ix) Use past tense for the work that has been done, and present tense for conclusion and recommendation.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

1) Highlight the difference between the two concepts 'abstracting service' and 'abstracting periodical'.

....

....

....

....

....

....

2) Describe the usefulness of abstracts.

....

....

....

....

....

....

3) How will you locate the key information from the document for preparing an abstract?

....

....

....

....

....

3.3 DIGEST SERVICE

Some of you might have read *Reader's Digest*. The global editions of this general-interest family magazine reach over 100 million people in more than 70 countries, with 50 editions in 21 languages. It has a global circulation of 17 million, making it the largest paid circulation magazine in the world. It is also published in braille, digital, audio, and a version in large type. At times you find in the magazine the column Book Bonus. Under this column you find a condensed version of a book. For example, in the June 2010 issue of *Reader's Digest* under Book Bonus you find the condensed version of the book *Love will not be Enough – A Mother's Fight for Her Son* under the title 'Love is not Enough' What you are getting in this is a digest of the whole book. You have seen above that the length of an abstract varies from a few words to about one thousand words. In the case of a digest there is no such limit. The digest of *Mahabharata* can go up to tens of thousands of words.

A **digest service** may take the form of a periodic publication like *ERIC Digest*, a book like *Company Law Digest* by Taxman Publishing, a system like West American Digest System, etc. There may be agencies who may prepare digest on demand. A library may also provide digest service in case there is the need. For providing such a service, a library will have to take the help of persons skilled in the art of preparation of digests.

3.3.1 Definition and Scope

A digest is a condensed form of a previously published material, such as an article, a book, an essay, and the like. More often than not, they are longer than the longest abstract. Sometimes a digest looks like a review article. A digest may be in the form of a book also. Matter is gathered from a source or sources and then consolidated into a single article, book, etc. The scope of a digest varies. As far as the subject is concerned, it may belong to any subject like education, law, and other subjects. It may pertain to a form of a document even. You can have a digest of a novel, short story, drama, etc.

3.3.2 Types of Digests

Digest can be categorised according to the number of sources that has been used to prepare a digest. There may be single-source digest or multiple-source digest.

i) **Single-source Digest –** A single-source digest is based on a single book, essay, article, etc. Under the Book Bonus column, *Reader's Digest* publishes a single-source digest.

ii) **Multiple-source Digest –** The *ERIC Digest* is a serial publication. It publishes multiple-source digests. These digests look more or less like review articles. An example of an *ERIC Digest* is given under Section 3.3.4.

3.3.3 Preparation of a Digest

While preparing a digest you are to condense the information following normal procedure of summarisation as you have learnt in your language classes. A digest is different from an abstract since the components of a digest are different. It is different in other ways also which you will see in the following section.

Components of a Digest

i) **Title** – While preparing an abstract, you cannot change the title of the original document. You can do so if the language of the original article differs from the language of the digest. In a multiple-source digest, you are to provide the title yourself. Even in a single-source digest, the title may be changed. For example *Mahabharata for Children* is a digest of the original *Mahabharata*.

ii) **Author** – In a single-source digest, the name of the original author is to be given. In a multiple-source digest, the writer of the digest will be the author.

iii) **Abstract** – Usually, an informative abstract may be provided.

iv) **Keywords** – All relevant keywords may be provided. Number is not fixed for keywords.

v) **Body of the Text –** In the body of the text, there will be sections with headings. In the digest of the book *Love will not be Enough –A Mothers Fight for Her Son* earlier referred to, we find the following headings like:

At the therapist

In a hurry

Waiting for help

Therapy starts

Worries and doubts

Spinning thoughts

Preschool

Three small words

A better life

You can see the body of the text of *ERIC Digest 133* given under Section 3.3.4. You will notice various sectional headings in this text.

vi) **Graphics –** Tables, charts, diagrams, photographs, etc. may be added as per the need. In the digest of the book referred to above, there are colourful photographs. In technical digests formulas, tables, charts, diagrams, photographs, etc. are added as and when necessary.

vii) **Conclusion –** Depending on the need a 'Conclusion' may be added.

viii) **References –** References are to be given as they are given in a research article.

3.3.4   Examples

Given below is an example of an *ERIC Digest*

Example 1

ERIC Digest 133 – December 1999

Conducting a Principal Search

By Elizabeth Hertling

Educators know that a principal can make or break a school. The job is a difficult one, and filling a vacancy can be "as elusive as the search for the Holy Grail" (Jones 1995). School districts are struggling to complete that elusive quest nationwide in the face of a shortage of administrative candidates for the principalship. In 1998, fifty per cent of 400 superintendents surveyed reported trouble filling principal vacancies (Educational Research Service and others 1998).

Why does this shortage of candidates exist? One reason is that an increasing number of school administrators are retiring. The U.S. Bureau of Labor Statistics estimates that over the next decade, 80,000 principals will either retire or leave the profession (Jones). Others cite low pay, demanding hours, and stress as reasons fewer are attracted to the principalship. The growing demand for accountability and the increased influence of parents also turn off some school leaders. "It seemed like I spent all my time fighting," says Jim Ford, a standout principal who left his position (Williams 1999).

This Digest addresses the steps school boards and district officials can take to find qualified applicants for vacant school leadership positions.

How Can School Districts Increase the Candidate Pool?

Preventive measures to increase the pool of qualified candidates for the position can simplify a search. Anderson (1991) recommends developing a pool of qualified candidates inside the school by creating career ladders. For career ladders to work, he says, districts must give the individuals who occupy these positions sufficiently diverse experience to qualify them for the principalship. For example, assistant principals should not be treated as "single-facet administrators" good only as disciplinarians or directors of activities (Anderson).

Recruiting teachers through internships and training programs is another way of increasing the pool of qualified principal candidates. Barker (1997) tells districts to be aggressive: identify the professional and personal benefits of the principalship and then sell those benefits to talented teachers. Districts should also make sure the salary differential between the two positions is sufficiently large to motivate teachers to take on the responsibilities of the principalship.

At California's Oxnard Union High School District, the staff-development coordinator meets monthly with a hand-picked group of classroom teachers to discuss leadership and other topics essential to the principal's role. These teachers are given opportunities to shadow principals and to learn about credential and degree programs in educational administration (Adams 1999).

Where Does the Principal Search Begin?

The first step in conducting a principal search is to announce that there is a vacancy. Seyfarth (1996) recommends first preparing a job model or job description. Because the duties differ from district to district and school to school, Seyfarth suggests interviewing those who currently hold the position. Ask staff members, parents, and students to describe what they believe the school needs from their principal, Jones adds. The list of duties can then be converted into an inventory of results sought, and finally, descriptions of the job environment and priority actions can be included (Seyfarth).

By completing a job model, district officials may avoid a common problem: vacancy announcements that are too vague, often not even specifying the particular school where the opening exists (Anderson). An announcement that lists the special needs and characteristics of a school is more likely to attract good candidates, as well as increase the chances of selecting the right person for the job.

Elements in vacancy announcements include the required tasks to be accomplished by the person filling the position; important characteristics of the staff; students' family backgrounds, cultures, and feelings about the school; as well as information about other executives in the school system (Anderson).

Once the vacancy announcement is written, where should administrators advertise? Many districts announce all vacancies to current employees. Publications such as *Education Week* and newspapers should be considered, as well as state and national professional associations.

Anderson argues that having a set of criteria for selection before beginning the screening process is vital to the success of the search process. He cites Baltzell and Dentler's study (1983), which found that districts that put off establishing a list of criteria often did not hire based on skill or merit, but on how a candidate would fit into their district, thereby maintaining the existing system. All these elements of advertising a principal vacancy involve one very critical step: Know your school (Jones).

Who Does the Screening?

Typically, screening is a two-step process. First, the personnel office screens resumes and applications for candidates who meet specific certification and experience standards. Next comes the more formalized step of paper screening of those candidates who pass the initial screening. Anderson suggests that this is where many districts begin to fail in their search process. What is needed, he says, is a standardized ranking system by which screeners can systematically rank applicants. As well, it is important to include others besides senior administrators in the screening process: teachers, principals, parents, and even students.

There are many different options available to districts in this step in their search. One is the use of an assessment center to screen potential candidates. The candidates participate in simulations that help districts to pinpoint potential principals' specific strengths in such professional areas as problem analysis, judgment, decisiveness, and leadership (Anderson).

Another option is the use of written assessments. Writing assignments help screeners assess not only the candidate's beliefs, but communication skills as well (Anderson).

What Constitutes an Effective Interview?

Although the interview is the most widely used and most influential tool in hiring decisions, it is neither valid nor reliable if used incorrectly. Anderson notes that the typical interview is unstructured, lasts less than one hour, and is highly influenced by first impressions. Studies suggest that interviewers may decide to hire or reject an applicant within the first five minutes of an interview (Anderson).

How can interviews be made to work? The first step is to determine who will interview the candidates. Interviewers should posses such qualities as alertness to cues, ability to make fine distinctions, and ability to suppress biases, Anderson says. In some exemplary districts, he says, superintendents establish the selection process, but then wait until a committee of parents, teachers, and principals identify two or three top candidates. Winter and others (1998) recommend training for interviewers, particularly teachers who may search for an instructional leader and overlook other important administrative qualities.

The structure of the interview process can vary. The interview itself, argues Anderson, is more effective and reliable when all candidates are asked identical, predetermined, well-thought-out questions. One school district sums up the questioning process by saying, "Tell us what you would do, show us what you would do, let us ask others what you have done in similar situations" (Jones).

Some districts ask applicants to demonstrate their skills in a performance simulation, such as watching a twenty-minute classroom lesson designed specifically for the interview by a staff-development teacher. The applicant then prepares an observation report and holds a conference with the teacher who conducted the lesson (Anderson).

As for the actual process of the interview, only a few members of the interviewing team should conduct the initial interviews, suggests Raisch (1993). Then, once the candidates have been narrowed down, the entire team can be divided into panels, and the candidates can move from one group to the next. The superintendent then asks for the names of two or three people who seemed the most qualified; he or she also asks the group to talk generally about the candidates.

Another step may be to visit the finalists at their "home turf." As well, superintendents must check references. Barone (1994) warns administrators to look out for misleading references that should send up a red flag, including descriptions such as "a real workaholic." That person may accomplish in 80 hours what another could do in 40. "Always accessible" may mean that the person will drop everything to see whomever asks, indicating a lack of time-management skills.

How Can Districts Make the Principalship More Attractive?

Can school districts change the structure of the principalship to make the position more attractive to some qualified candidates? Some observers believe that, to provide more incentives for talented administrators, the position of principal needs to be restructured.

McAdams recommends that districts preserve the principal's role of instructional leadership by placing less emphasis on budgetary and legal responsibilities. To do this, districts would need to add support-services personnel.

In the Oxnard School District, Superintendent Richard Duarte, with the school board's approval, has placed a coadministrator at each elementary school with an enrollment of 900 or more. Likewise, in Thousand Oaks, California, the Conejo Unified School District has authorized vice-principalships for its three elementary schools that exceed 700 enrollment (Adams).

Giving principals more authority to make decisions would free them to perform at their highest level of efficiency. Barker advocates higher salaries for principals and stronger mentoring systems for new principals. Job sharing is also an option for districts. Two people shouldering the responsibilities can ease the stress and isolation that many administrators may feel.

RESOURCES

Adams, Jeanne P. "Good Principals, Good Schools." *Thrust for Educational Leadership* (September/October 1999): 8–11.

Anderson, Mark E. *Principals: How to Train, Recruit, Select, Induct, and Evaluate Leaders for America's Schools.* Eugene, Oregon: ERIC Clearinghouse on Educational Management, University of Oregon, 1991. 133 pages. ED 337 843.

Baltzell, Catherine D., and Robert A. Dentler. *Selecting American Principals: A Sourcebook for Educators.* Cambridge, Massachusetts: Abt Associates, Inc., January 1983. 68 pages. ED 236 811.

Barker, Sandra L. "Is Your Successor in Your Schoolhouse? Finding Principal Candidates." *NASSP Bulletin* 81, 592 (November 1997): 85–91. <u>EJ 553 822</u>.

Barone, Stephen G. "Avant Garde — Or Out to Lunch?" *The Executive Educator* 16, 5 (May 1994): 47–48.

Educational Research Service; National Association of Elementary School Principals; and National Association of Secondary School Principals. *Is There a Shortage of Qualified Candidates for Openings in the Principalship? An Exploratory Study.* Arlington, Virginia: Authors, 1998.

Jones, Rebecca. "Picturing Your Perfect Principal." *The Executive Educator* 17, 5 (May 1995): 16–21. <u>EJ 502 941</u>.

McAdams, Richard P. "Who'll Run the Schools?" *The American School Board Journal* 185, 8 (August 1998): 37–39. <u>EJ 570 113</u>.

Moore, Duane H. *Where Have All the Principals Gone?* Rochester, Michigan: Oakland University, 1999. 9 pages. <u>ED 429 368</u>.

Raisch, C. Daniel. "Let Teachers Pick Principals." *The Executive Educator* 15, 8 (August 1993): 23–24. <u>EJ 466 885</u>.

Seyfarth, John T. *Personnel Management for Effective Schools.* Second Edition. Boston: Allyn and Bacon, 1996. <u>ED 416 568</u>.

Williams, Anne. "Toll on Principals Creates Vacancies." *The Register-Guard* 132, 317 (September 6, 1999): 1.

Winter, Paul A.; Donna H. McCabe; and Rose Mary Newton. "Principal Selection Decisions Made by Teachers." *Journal of School Leadership* 8,3 (May 1998): 251–79. <u>EJ 565 115</u>.

Example 2

Cold Regions Research & Engineering Laboratory (CRREL) of US Army Corps of Engineers brings digests in the form of a serial publication *Cold Regions Technical Digest*. These digests communicate 'essential technical information in condensed form to researchers, engineers, technicians, public officials and others. They convey up-to-date knowledge concerning technical problems unique to cold regions. Attention is paid to the degree of detail necessary to meet the needs of the intended audience. References to background information are included for the specialist. We cannot reproduce the whole digest due to lack of permission.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

4) Enumerate the components of a digest and briefly describe each component.

....

....

....

....

3.4 NEWSPAPER CLIPPING SERVICE

Everyday hundreds of news items are published in newspapers in various languages. Apart from news items, a newspaper contains editorials, leaders, articles, letters, photographs, cartoons, comics, obituaries, book reviews, advertisements, etc. You all have seen newspapers and know about them. Most newspapers appear daily. Of course, there are newspapers of other frequencies as well. Mostly people scan through the newspapers as they do not have time enough to go through all the items appearing in all the pages. People read the items that interest them and others they leave aside. There are national as well as local newspapers. National newspapers cover the news of the entire nation and also selective news of the world. From every state of India newspapers appear in the predominant language of the state as well as in English. Also there are newspapers which cover mostly the news of the district. You will be surprised to know that there are at present 74,000 newspapers in India (http:// www.thaindian.com/newsportal).

There are persons who are interested in particular items of information. For example, a political leader might be interested to know the opinion of the people about her/his activities all over the nation, the head of an institution would be interested to know the opinion of the people about her/his institute, an actor or actress would be eager to know the feedback of the people about his or her new film.

This shows that there are numerous people who are interested to know about the news items wherein their names are appearing. May be some news items are in favour of them and some against. Whatever may be the case, they should know about them. Suppose, a newspaper has wrongly reported an item of the speech of a political leader and if s/he comes to know about it, s/he can give a rejoinder.

You have already seen the number of newspapers being produced from India. It is impossible for any one to glance through all the newspapers. If someone intends to scan all the important daily newspapers in English, even then it will be difficult for her/him to find that much time. Do you not feel that it would be wonderful if a service provider gives you all the news items everyday wherever you name is figuring? Undeniably it would be a great relief for you.

You will be delighted to know that such a service exists and is called **newspaper clipping service**. In this service according to the demand of customers the service is provided. In some cases the service is provided daily, or at longer intervals. When a library provides the service to its users it is usually free. Private agencies providing such services are generally on payment basis. In this section we are going to deal with this.

3.4.1 Definition and Scope

Clip means to cut out an item from a newspaper, magazine, etc. using scissors, blades, and the like. This makes the meaning of newspaper clipping service clear. In fact, it is a service provided with the clipping. The scope of the service depends on the demand of a service seeker. Suppose a person wants that for providing the service the following newspapers should be covered: *The Asian Age, The Hindu, Hindustan Times, The Indian Express, Mail Today, The Pioneer, The Statesman,*

The Telegraph, The Times of India, and The Tribune. This becomes the scope of the service. A government department may ask to cover newspapers as well as magazines not only in English but in other languages as well. Here the scope widens. For this service the scope is flexible and depends on the demand of the customer.

3.4.2 Types

Four types of newspaper clipping service are quite common. They are: person-oriented service, institution-oriented service, government-oriented service, and subject-oriented service. Let us have a glimpse of these services.

Person-oriented Service – In this case, the focus is the person. All news items, letters, articles, etc. relating to the person should be included. This may include her/his speech, participation in a debate, photographs, interviews, etc. The service may not be on daily basis because not all persons become the subject of news everyday.

Institution-oriented Service – In this case the focus is an institution. The institution may be an academic institution like a school, college or a university, a religious institution like a mission, a society, a research laboratory, etc. These institutions from time to time generate news by organising various events. On the other hand, various people may write about these institutions. Thus information is generated in both the ways. All should be included in the service. Suppose a university is organising an international seminar. Obviously reporters from the media will report various events relating to the seminar. The university will like to have all the reports published in the newspapers. Often this job is given to the library as the library receives the newspapers. The library generates the service on a daily basis.

Government-oriented Service – The central as well as state governments either have a department exclusively devoted for the purpose, or give the responsibility to a service provider to supply the newspaper clippings on a daily basis. Some government offices demand that the clippings should be delivered before the start of the office so that the persons concerned get the clippings just on her/his arrival to the office.

Subject-oriented Service – Suppose a professor of a university teaches the subject 'Political situation of Southeast Asia'. Obviously s/he will be interested to know the day-to-day development of the region. Whatever is published in the newspapers about the region should be supplied to her/him. This is a subject-oriented service.

3.4.3 Organisation of the Service

Step 1 – Selection of the Items: All the headings of a newspaper should be read. When the subject is not clear from the heading, the textual matter should be read. When an item matches with the interest profile of the user, it should be marked.

Step 2 – **Clipping:** The marked items should be cut nicely so that nothing vital is left out. Special care is to be taken while cutting a photograph. It should not get disfigured while cutting. If the item spreads to two pages, both the pieces should be cut.

Step 3 – **Pasting:** The items cut should be pasted on paper of suitable size (A4 size will be all right). If an item is divided into two pieces, it should be pieced together while pasting. It should be borne in mind that only one item should be pasted on a single sheet of paper, and that too only one side of the paper.

Step 4 – **Assigning Subject Heading and Location:** On the top of the paper subject heading is to be written on the left side, and the name of the newspaper along with the date and page/s on the right side.

For providing subject headings you may follow any standard list of subject headings like *Library of Congress Subject Headings*. In many cases you will have to create subject headings yourself as they will not be available in the standard list. While creating new subject headings you will have to maintain an authority file. In the absence of such file, the same subject may get more than one subject headings which will lead to confusion.

Step 5 – Distribution of the Clippings: Matching with the subject profile of each customer, the clippings should be distributed. When the same clipping matches two or more user profiles, photocopies will have to be supplied.

Newspaper clippings are of great importance for researchers, scholars and many others. An author writing the history of a country, or the biography of a renowned person, can find newspaper clippings to be of immense help. Hence, it will always be advisable to retain the master copy of the clipping in the library for providing future services. With the facility available for digitisation, librarians over the world are taking steps to digitise newspaper clippings.

3.4.4 Examples

Example 1

Landslides – China   *The Statesman* **20 August 2010 p.13**

Landslide Claims 14 lives in China

BEIJING, 19 AUG: Chinese rescuers scoured a remote valley in the nation's southwest for survivors on Thursday after a landslide leveled a village, killing at least 14 people and leaving dozens missing.

The landslide in Puladi, a settlement in Yunnan province, was the latest of a succession of natural disasters to have struck China this summer after torrential downpours unleashed floods and dislodged hillsides.

In the worst landslide, at least 1,287 people died in Zhouque, northwest Gansu, and more than 450 are missing, feared dead. Pictures from Puladi showed a swathe of the green valley covered in mud, with rescues laying planks across the destruc-

Beijing: Envoy visited N Korea

BEIJING, 19 AUG: China said today that a top envoy had visited North Korea this week for talks on the resumption of negotiations aimed at ending Pyongyang's nuclear drive, with tensions running high in the region. The trip by the official, Wu Dawei, came as an aircraft believed to be a North Korean fighter jet crashed in China's northeast, killing the pilot. **afp**

tion to reach a stricken village of about 100 residents, some of them workers at a small iron mine. **reuters**

Clipping of a News Item

Example 2

IGNOU Vice Chancellors – Photograph
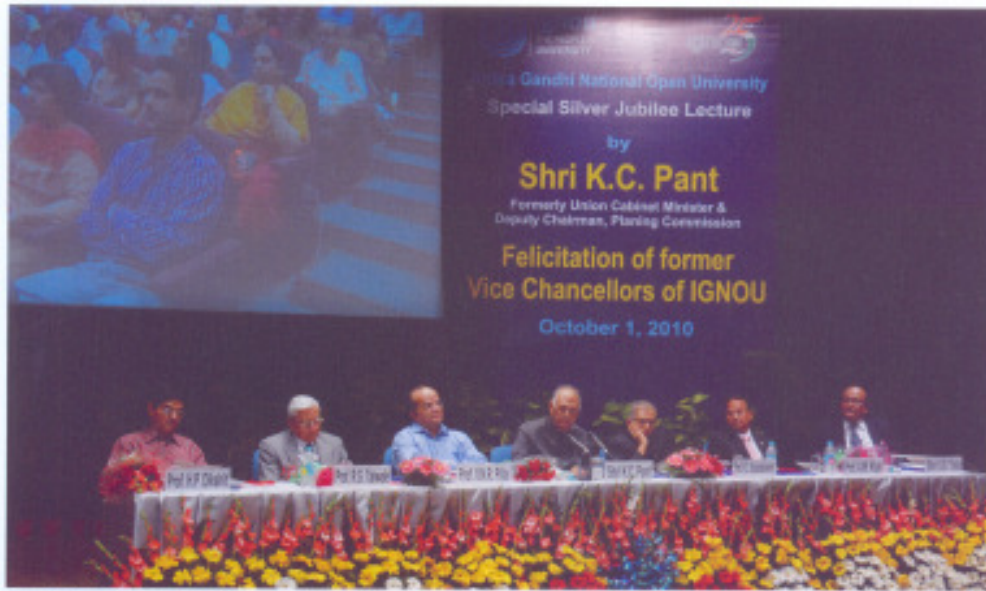
IGNOU Open Letter – Oct. 15, 2010 P. 12

From left, Prof H.P. Dikshit, Prof R.G. Takwale, Prof V.N. Rajasekharan Pillai, Shri K.C. Pant, Prof V.C. Kulandaiswamy, Prof A.W. Khan and Registrar U.S. Tolia at the special felicitation ceremony of the former Vice Chancellors at the University's Convention Centre in New Delhi on October 1.

Example 3

IGNOU Regional Centres – Photograph

IGNOU Open Letter – Aug. 15, 2010 P.7

Clippings of Photographs

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

5)   How will you organise a newpaper clipping service ?

....

....

....

....

....

....

....

....

3.5   SUMMARY

The Unit covers three distinctly different services, viz. the abstracting service,
the digest service, and the newspaper clipping service. Librarians are concerned
with all these services as they are all useful information sources. More often
than not they are also to generate such services that involve preparation of abstracts
and digests. An attempt has been made here to equip you in such a way that you
can do all the jobs yourself. In the initial stages you may not be able to do the
jobs efficiently. However, with the passage of time you will gather experience
and gradually become an expert in the art.

Now, we shall provide here a glimpse of what has been described above. While
discussing abstracting service we have discussed two concepts i.e. abstracting
service and abstracting periodical and clarified the differences between the two.
Necessity of an abstracting periodical/service, and its scope have also been
touched upon. An abstracting periodical/service comprises abstracts. Hence the
term 'abstract' has been explained, its usefulness highlighted, and various types
of abstracts have been detailed with examples. Quite often a librarian has to
prepare an abstract, and that's why the method of abstracting has been described
step by step. The citations for various types of documents are included.

Digest services are quite common in the world. *Reader's Digest* is a famous
example because in *Reader's Digest,* digests of some items are given. There are
many periodicals which publish only digests. The term 'digest' has been explained
and its definition highlighted along with scope. While describing the preparation
of a digest its components have been enumerated and explained. An *ERIC Digest*
has been reproduced fully to provide a better understanding of the concept.

Newspaper clipping service is quite common in libraries. Providing such a service
is easy. The service has been defined and its scope discussed. Several types of
the service are described. Organisation of the service has been detailed with
examples.

3.6   ANSWERS TO SELF CHECK EXERCISES

1)   An abstracting service generates an abstracting periodical apart from other products such as: i) List of subject headings , ii) List of periodicals abstracted, etc. On the other hand an abstracting periodical is a periodic publication containing abstracts arranged in some predetermined order and provides various indexes (author, subject, keyword, etc.).Generally, it appears at regular intervals. Nowadays many abstracting periodicals are available both in print form and digital form.

2)   Abstracts are useful in a number of ways. Some of the uses are given below:

   i)   They facilitate the selection of papers to be read by a researcher. Due to the   huge output of literature in science and technology and many other areas of knowledge, it is not possible for the researchers to keep them abreast of the developments in their field by going through a few journals accessible to them.

   ii)   They remove the language barrier to a great extent as has been pointed out already.

   iii)   In many cases an informative abstract eliminates the need for going through the original article.

   iv)   For writing review articles, digest, preparation of class notes for Masters and M Phil classes, etc. abstracts are of great use.

3)   For this purpose systematically I will follow the procedure given below:

   i)   I will read the introductory paragraphs of the paper carefully. Usually these paragraphs provide information about the objectives, scope, hypotheses (if any) of the study. If this is not a research paper even then introductory paragraphs provide some information which prove to be valuable for writing the abstract.

   ii)   Many papers include author abstracts. Sometimes the author abstract with a little bit of modification can be shaped into a good abstract. If an author abstract provides a long introduction before describing the actual study, I will just leave out the introduction and take the remaining part for the abstract.

   iii)   The summary and the conclusion given at the end of the paper generally reveal the author's findings and recommendations, if any. Hence, I will note them.

   iv)   I will scan the text for finding out the methodology, materials and/or equipment used, useful data, and any other valuable information.

   v)   I will mark the important phrases and passages and note the useful information in the margin.

4)   The components of a digest are: title, author, abstract, keywords, body of the text, graphics, conclusion and references.

   i)   **Title** – If the original article and the digest are in the same language then the original title will be retained in the digest. If they are different, then the digest will have the translated title. In a multiple-source digest, the author will have to provide the title.

ii) **Author** – In a single-source digest, the name of the original author is to be given. In a multiple-source digest, the writer of the digest will be the author.

iii) **Abstract** – Usually, an informative abstract will be provided.

iv) **Keywords** – All relevant keywords will be provided.

v) **Body of the Text –** In the body of the text, there will be sections with headings. Headings should reflect the intellectual content of the section.

vi) **Graphics –** Tables, charts, diagrams, photographs, etc. may be added as per the need. In technical digests formulas, tables, charts, diagrams, photographs, etc. are added as and when necessary.

vii) **Conclusion –** Depending on the need conclusion may be added.

viii)**References –** References are to be given as they are given in a research article.

5) First of all, relevant items will be selected by scanning the newspapers, magazines, etc. Once this process is over, all the items will be clipped taking care that on each item the location is mentioned. All the clippings will be pasted in the next stage. After pasting, the subject headings and locations will be recorded. All the clippings are now ready for distribution which will be done according to the user profile.

3.7 KEYWORDS

Abstracting Periodical : An abstracting periodical is a periodic publication having a fixed frequency which may be monthly, quarterly, etc. It contains bibliographical details of a document along with its abstracts which are arranged in some systematic order.

Abstracting Service : An abstracting service is generally a bibliographical service (in many cases commercial) that provides bibliographical details of a publication along with the abstract of the same. Usually it appears in the form of an abstracting periodical either in printed or digital form. The service also brings out by-products (indexes etc.) of the periodical.

Clipping : A page, piece of a page, or pages cut or torn from a printed publication, usually from a newspaper or magazine, by a person who wishes to save an article, editorial, letter to the editor, photograph, cartoon, etc. [Reitz]

Clipping Service : A service, usually performed in a special library, in which news announcements, articles, photographs, and other items of interest to the host organization are clipped from current periodicals and news services on a daily or weekly basis to be forwarded to appropriate

personnel within the organization, based on pre-established interest profiles [Reitz]. The service is provided by not only special libraries but also other libraries like university libraries.

Digest : A digest is a condensed form of a previously published material, such as an article, a book, an essay, and the like. Quite often, they are longer than the longest abstract. Some digests look like a review article.

Digest Service : A service based on digests. The service quite often takes the form of a periodical, a book, etc.

3.8 REFERENCES AND FURTHER READING

"Clipping". Reitz, Joan M. *ODLIS – Online Dictionary of Library and Information Science*. Web. 22 Aug. 2010. <http://lu.com/odlis/search/cfm>.

"Clipping Service". Joan M. *ODLIS – Online Dictionary of Library and Information Science*. Web 22 Aug. 2010. <http://lu.com/odlis/search/cfm>.

Cold Regions Technical Digests. Web. 19 Aug. 2010. <http://www.crrel.usace. army.mil/techpub/CRREL_Reports/>.

ERIC Digests . Web. 19 Aug. 2010. <www.ericdigests.org>.

ISA Manual: A Draft. Delhi: Indian National Scientific Documentation Centre, 1969. Print.

MLA Handbook for Writers of Research Papers. 7th ed. New Delhi: Affiliated East-West Press, 2009. Print.

Reader's Digest. Web. 22 Jul. 2010. <www.billdesk.com/rd.htm>.

Reitz, Joan M. *ODLIS – Online Dictionary of Library and Information Science*. Web. 30 Jul. 2010. <http://lu.com/odlis/search/cfm>.

"Slanted Abstract". Reitz, Joan M. *ODLIS – Online Dictionary of Library and Information Science*. Web. 30 Jul. 2010. <http://lu.com/odlis/search/cfm>.

Style Manual for the Presentation of English-Language Texts intended for Publication by UNESCO. 2nd rev. ed. Paris: UNESCO, 2004. Print.

UNIT 4   REFERRAL SERVICE

4.0   OBJECTIVES

After reading this Unit, you will be able to:

- describe the history of referral service;

- explain the need for referral service;

- identify the tools for referral service;

- know the tools that you are to create; and

- equip yourself for referral service.

4.1   INTRODUCTION

Learned people, students, teachers, researchers, common readers, and many others visit libraries to borrow a book, to return a book, to consult reference books, periodicals, and newspapers which are not usually issued, to search the Internet, to search databases, to place an order for a bibliography, to get a photocopy of an article, etc. In case of difficulty, the library staff extends help to them to tide over the difficulty. In addition to all these, they visit the library with various other demands. The number and variety of demands are limitless. These demands pertain to documents as well as for information. They may range from the demand for a translation of a Zulu document into English or to supply of latest information on superbugs. The collection of the library varies from a few hundred documents to a few lakhs or more. The collection of Library of Congress goes beyond one crore. The library staff tries to answer the queries on the collection the library

has. It is a fact that no single library in the world can answer all the queries or meet all the demands of the users. When a library staff does not find an answer to a query, s/he has two options – either to tell the user that the library does not possess the document or to inform the user about the probable place or person wherefrom the user can get the document or the information. It is the second option we are gong to deal with in this Unit. The service underlying the second option is called referral service.

4.2 REFERRAL SERVICE

Reference service is being provided by libraries since long. Compared to that referral service is a new phenomenon. National Referral Centre for Science and Technology in the Library of Congress was formally established with the support of National Science Foundation in September 1961 and became operational in March 1963 (Mcfarland, O'Hara). "The National Referral Centre was designed as 'a clearing house to provide comprehensive, co-ordinated access to the nation's resources of scientific and technical information' (Mcfarland 264). It was entrusted with four major areas of responsibility:' (1) the identification of all significant information resources in the fields of science and technology; (2) the acquisition, cataloguing and correlation of substantive and procedural data defining the nature, scope and capabilities of these resources; (3) the provision of advice and guidance about these resources to any organisation or individual requiring access to them by responding to requests for referral assistance and by publishing directories and guides in selected subject fields; and (4) the exploration, through actual operating experience, of the roles and relationships that exist or should exist among the many elements of the scientific and technical information complex'(Mcfarland 264).

The term 'information resource' used in the first area of responsibility comprises 'any organization, facility, or individual willing and able to give authoritative responses to scientific and technical inquiries out of an existing – but perhaps little known, or known but not discovered store of knowledge or expertise' (Mcfarland 264).

The National Referral Centre served as a model for establishing referral centres in various places in the world by spelling out the requisites essential for establishing a referral centre, the type of services it should provide, the publications it should bring out, etc. With the passage of time the concept gained momentum and libraries started providing referral service. Some institutes also became referral centres on a specialised area. For example, National Dairy Research Institute (NDRI) is a referral centre on dairy research in India. Similarly National Neuroscience Information Centre of National Institute of Mental Health and Neurosciences (NIMHANS) is a recognised referral centre in the area of mental health and neurosciences. It is to be noted that some hospitals are also termed as referral centres. These types of hospitals are beyond the scope of our study.

4.2.1 Definition

Referral centre – An organisation which directs researchers to information and appropriate sources but does not supply documents.

Referral service – A type of reference service in which an information seeker is directed to an agency or expert outside the library wherefrom the information may be obtained.

From the two definitions given above, it becomes clear that referral service is a type of reference service, may be an extension of reference service, in which no document is given. The information seeker is directed to an agency or an expert who is likely to supply the information. From the definition it is also implied that the information is not available in the library.

4.2.2 Scope

This service is not bound by any limit. The scope is omnifarious**.** The service may be provided on any topic, to any user literate or illiterate, male or female, young or old, at any place – a remote village or a busy town, at any time, based on the sources available at hand or in the memory.

4.2.3 Need for Referral Service

Let us take the case of a scholar who was doing research on the Naxal Movement. The scholar knew that Naxals were publishing a periodical called *Deshbrati* which was banned by the government. As a result the scholar was not getting the periodical from any library. One librarian informed that the copies might be available at the Police Headquarters in Kalkata. The scholar went there. After verifying her/his credentials the police allowed the scholar to consult all the issues. This is how the research scholar was helped through referral service.

Another librarian was moving from library to library to find out the picture of a particular medicinal plant grown in India. The top boss of her institute needed

the picture for a research paper. One day she chanced upon her teacher and informed him about her problem. Immediately the teacher told her that she would get the picture in Kirtikar and Basu's *Illustrated Indian Medicinal Plants* and the book was available in IARI library. In no time the job of the librarian was done.

These two examples make it clear that there is a need for referral service.

Self Check Exercise

Note: i) Write your answer in the space given below

   ii) Check your answer with the answers given at the end of this Unit.

2) Explain why a library should provide referral service.

   ....

   ....

   ....

   ....

   ....

   ....

   ....

   ....

   ....

4.2.4   Tools for Referral Service

It is rather unfortunate that in our LIS courses much importance is not given to the referral service. As a result, if the required document or information is not available within the library, most librarians usually say that the required document or the information is not available in the library. They do not advise the user to go to some experts, libraries, or agencies to get the document or information. The reason is - in most cases they do not know where to direct the inquirer. Now we shall discuss about the tools which will help you to render referral service. Some of the tools required for the purpose are available either in print or in digital form. Other tools you will have to create. First, we shall deal with those tools which are already available. Afterwards we shall discuss about those tools which you will have to create and if situation permits you can print them as well.

There are certain tools which give you information about the holdings of various libraries. These tools are called union catalogues. There are union catalogues of books, periodicals and other bibliographic materials. A union catalogue records the holdings of various libraries. Usually it is arranged alphabetically according to author, document titles, etc. Under each document, the names of libraries having the document are given usually in abbreviated form. In the union catalogue of periodicals apart from title, sponsor, place of publication, date of starting and ceasing (if the periodical has ceased publication), volume numbering, etc. are recorded including all irregularities. Given below is a page scanned from *National Union Catalogue of Scientific Serials in India.*

26-30/

D038400
DENTAL BRIEF.
PHILADELPHIA, PA. 1-18, 1896-1913.
1, 1896 WELCHS MONTHLY.

BLWMKG 4-18, 1899-1913 /7, 17/

D038900
DENTAL CLINICS OF NORTH AMERICA.
PHILADELPHIA, PA. 1957+

ADIMAI 13-18, 1969-74
ADIMNM 1, 1957+
BADMMN 12, 1968+
BKRMGS 6, 1962+ (13, 18)
BLWMKG 1957+
BVIMCM 9-19, 1965-75 /11-14/
FCRMPG 12, 1968+
FLAMCM 14-18, 1970-74 (15, 18)
GRKMMC 15, 1971+
HBRMSP 13-20, 1969-76
KBYMNH 5, 1960+ (5-9, 13, 15, 18)
KNRMGD 12, 1968+
MBEMSJ 23, 1979+
NCTMMC 19, 1975+
NKTMMC 7, 1963+ (9, 16,20)
NTMMMC 6, 1961+ (8, 10)
PMSMMC 9, 1965+ /10-20/
PTRMTM 7, 1963+ /11-12, 16-25/
QPYMJI 14, 1970+ /13,18-19/
SBEMMK 21, 1977+
WCAMAD 1, 1957+ /2, 4-6,10 15/(7, 16)

D039000
DENTAL COSMOS.
NEW ENGLAND DENTAL SOCIETY.
PHILADELPHIA, PA. 1-78, 1859-1936.
AMALGAMATED WITH-- JOURNAL OF THE AMERICAN DENTAL ASSOCIATION AND DENTAL COSMOS.

ADIMNM 72-77, 1930-35
BLWMKG 1-78, 1859-1936 /4/
KBYMGS 68-78, 1926-36
KBYMNH 64-78, 1922-36 /74, 76/
WCAUCV 44-56, 1902-14 /45-46, 49-52, 54-55/

D039350
DENTAL DIALOGUE(BOMBAY).
INDIAN DENTAL ASSOCIATION, MAHARASHTRA STATE BRANCH.
BOMBAY. 1, 1974+

ADIMNM 2, 1975+ (2-3)
KBYMNH 1, 1974+
KNRMGD 1-7(2), 1974-80

D039400
DENTAL DIGEST.
DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES.
PITTSBURGH, PA. 1-78(8), 1895-1972.
AMALGAMATED WITH-- QUINTESSENCE INTERNATIONAL.

ADIMNM 38-65, 1932-59 /46-53, 57-63/ (55, 64)
ADIMSH 62-78, 1956-75 (78)
BLWMKG 8-78, 1902-72 /9-65 74/
FCRMPG 71-78, 1965-72 (78)
GRKMMC 69-78, 1963-72
KBYMNH 42-77, 1936-71 /48-51, 55, 76/
KBYMTN 38-78, 1932-72 /43-77/ (38-42, 78)
KPAMAF 66-78, 1960-72 /73/
NTMMMC 71-78, 1965-72
PMIMMM 51-69, 1945-63 /66/
PMSMMC 56-75, 1950-69
WCAMAD 63-77, 1957-71 (63-77)

D039550
DENTAL ECONOMICS.
PITTSBURGH, PA. 1, 1911+
CONTD FROM-- DENTAL HEADLIGHT. 1-57, 1911-67 ORAL HYGIENE.

BKRMGS 49-51, 1959-61 (49, 51)
KBYMNH 19-27, 1929-57 (22-26)
KBYMTN 57-59, 1967-69 (57-59)
NTMMMC 57, 1967+
PMSMMC 66, 1976+

D040100
DENTAL HEALTH.
BRITISH DENTAL HYGIENISTS ASSOCIATION.
LONDON. 1, 1962+

ADIMNM 3-14, 1964-75 /6-9, 12/

D040150
DENTAL HYGIENE.
AMERICAN DENTAL HYGIENISTS ASSOCIATION.
SAN FRANCISCO, CALIF. 1, 1927+
1-46, 1927-72 JOURNAL OF THE AMERICAN DENTAL HYGIENISTS ASSOCIATION.

PMSMMC 50, 1976+

D040400
DENTAL ITEMS OF INTEREST.
PHILADELPHIA, PA. 1-75, 1879-1953.
1-37, 1879-1915 ITEMS OF INTEREST.

ADIMNM 66-69, 1944-47 /68/
BLWMKG 19-75, 1897-1953 /25-32, 34, 36, 39, 42-51, 59-60, 63-68, 70, 73-74/
KBYMNH 52-70, 1930-48

D040520
DENTAL JOURNAL(TORONTO).
SEE JOURNAL OF THE CANADIAN DENTAL ASSOCIATION.

D040600
DENTAL JOURNAL OF AUSTRALIA.
AUSTRALIAN DENTAL ASSOCIATION, NEW SOUTH WALES BRANCH

SYDNEY. 1-27, 1929-55.
AMALGAMATED WITH-- AUSTRALIAN DENTAL JOURNAL.

KBYMNH 8-27, 1936-55 (8-27)

D040850
DENTAL LABORATORY NEWS.
NEW YORK STATE DENTAL LABORATORY GUILD.
NEW YORK. 1, 1940+

PMSMMC 18, 1956+ /21-23/

D041100
DENTAL MAGAZINE AND ORAL TOPICS.
LONDON. 1884-1918, NS NO. 1-3, 1919-24, 41(4), 1924+
1884-1907 QUARTERLY CIRCULAR 1908-10 ASHS QUARTERLY CIRCULAR, 1911-16 ASHS MONTHLY, 1917-18 AHSH JOURNAL, NS NO. 1-3, 41(4)-45, 1919-28 DENTAL MAGAZINE. IRREGULAR NUMBERING.

ADIMNM 52-87, 1935-70 /54, 74, 85/
KBYMGS 46-56, 1929-39
KBYMNH 46-84, 1929-67 /51-52, 57-62, 64-65, 81-83/
WCAMMC 1932-39 /1935/

D042200
DENTAL PRACTIONER. SEE DENTAL PRACTIONER AND DENTAL RECORD.

D042400
DENTAL PRACTITIONER AND DENTAL RECORD.
BRISTOL. 1-22, 1950-71/72.
CONTD AS-- JOURNAL OF DENTISTRY. 1-5, 1950-54 DENTAL PRACTITIONER.

ADIMNM 9-22, 1959/62-72
BKRMGS 9-12, 1959-62 (9-10)
BLWMKG 9-21, 1958-70/71 /19/
BVIMCM 15-17, 1964/65-66 (17)
FCRMPG 12-22, 1962-72 (12, 16)
KBYMNH 5-22, 1955-72
KBYPBA 15-22, 1964/65-72 /10, 18-20/
KPAMAF 10-22, 1960-72
NTMMMC 11, 1961+ /15/
PMSMMC 6, 1956+ /8-12/
PTRMTM 14-21, 1964-71 /17-18/
PVEMCM 17, 1967+ (17)
QPYMJI 16-22, 1966-71
WCAMAD 17-20, 1966/67-69/70 (17-20)
WCAMNM 10-22, 1959/60-71/72 /21/(17,22)

D042450
DENTAL PRODUCTS REPORT.
CHICAGO. 1, 1967+

KBYMNH 11, 1977+

Let us try to understand the various components of an entry as given in the above page. In the entry number 3 of column 1,

i) **Dental Cosmos** is the title of the journal.

ii) **New England Dental Society** is the sponsor.

iii) **Philadelphia, PA** is the place of publication.

iv) **1-78** indicates that 78 volumes of the journal were published.

v) **1859-1936** implies that the journal started publishing in 1859 and ceased in 1936.

vi) The next component signifies that the journal finally amalgamated with **Journal of the American Dental Association** and the title became **Journal of the American Dental Association and Dental Cosmos**.

vii) The last component lists the holdings of five libraries. For each library a six-character symbol has been used. The first line - **ADIMNM 72-77, 1930-35** means that National Medical Library, New Delhi has volumes 72-77 that published during 1930-35. The second line **BLWMKG 1-78, 1859-1936 /4/** shows that the library has all the volumes except the 4th volume.

Now, suppose somebody is looking for, say, volume 70 of **Dental Cosmos**. If your library does not possess the journal, you can straightway direct the user to National Medical Library or any other library having the volume, where the user will get the volume and her/his job will be done. This is the beauty of a referral service. Despite the non-availability of the document in your library you can help the reader.

A list of some famous union catalogues of the world is given below:

Union Catalogue of Periodicals

1) *British Union Catalogue of Periodicals*. 4 vols. 1954. Supplement. 1960. London: Butterworths, 1970-. Print.

   Popularly known as BUCOP this catalogue is in four volumes plus the supplement list. This source covers 140,000 titles held in 440 British libraries. All these titles from all over the world were published during 1665 to 1960. It is to be noted that BUCOP had listed the first periodical of the world called *Journal de Scavans* started publishing from France in the year 1665. This shows that the coverage of the union catalogue starts from the very first periodical of the world. This catalogue incorporates *World List of Scientific Periodicals* (59,961 titles) as well. This is an extremely powerful source to locate a particular periodical in the world. The quarterly supplements of BUCOP with annual cumulations are being issued since 1960.

2) *Union List of Serials in Libraries of the United States and Canada*. 3rd ed. Edited by Edna Curtis Brown. New York: H. W. Wilson, 1965. Print.

   Lists 150,000 periodicals published during 1665-1949. You may notice that the coverage of this union list is wider than the previous catalogue. If a periodical is not available in BUCOP, it may be available here.

3) *Union Catalogue of Learned Periodical Publications in South Asia,* by S.R. Ranganathan and others. Delhi: Indian Library Association, 1953. Vol. 1 – Physical and Biological Sciences. Print.

   Covers about 6,000 titles held in 249 libraries in India and 175 libraries of Indonesia, Malaya and Burma.

From 1965, Indian National Scientific Documentation Centre (INSDOC) (now NISCAIR) had started compiling serial catalogues, and by 1981, it started compilation of large number of individual library catalogues and regional union catalogues. The catalogues of serials of the following libraries were brought out in the following chronological order.

i) *National Science Library, New Delhi*. October 1965.

85

ii)   *Indian Institute of Science Library, Bangalore*. January 1966.

iii) *Indian Statistical Institute Library, Calcutta.* August 1966.

iv)   *Indian Agricultural Research Institute Library, Delhi*. March 1967.

v)   *National Institute of Sciences of India Library, New Delhi* October 1968.

NISCAIR (erstwhile INSDOC) brought out the following Regional Union Catalogues as well:

i)   *Regional Union Catalogue of Scientific Serials – Bangalore*. June 1967.

ii)   *Regional Union Catalogue of Scientific Serials – Delhi Medical Libraries*. November 1967.

iii) *Regional Union Catalogue of Scientific Serials – Varanasi*. June 1968.

iv)   *Regional Union Catalogue of Scientific Serials – Mysore*. September 1968.

v)   *Regional Union Catalogue of Scientific Serials – Kerala*. May 1969.

vi)   *Regional Union Catalogue of Scientific Serials – Dehra Dun-Roorkee*. February 1971.

vii) *Regional Union Catalogue of Scientific Serials – Bombay-Poona*. April 1973.

viii) *Regional Union Catalogue of Scientific Serials – Madras*. February 1975.

ix)   *Regional Union Catalogue of Scientific Serials - Hyderabad*. December 1975.

x)   *Regional Union Catalogue of Scientific Serials – Lucknow*. February 1976.

xi)   *Regional Union Catalogue of Scientific Serials – West Bengal*. June 1978.

Besides these, NISCAIR has brought out the following Union List/Catalogue as well.

i)   *Union Catalogue of Serials in the Geological Survey of India Libraries*. July 1969.

ii)   *Union List of Current Scientific Serials in India.* December 1981. This union list recorded 11,511 foreign scientific serials and 1,892 Indian scientific serials held in about 800 libraries all over the country.

All these efforts of the NISCAIR culminated with the compilation of *National Union Catalogue of Scientific Serials in India (NUCSSI)*. It was published in 1988 in print form in four volumes and recorded holdings data of about 36,000 serial titles held in about 800 libraries in India. It has been updated till 2001, and is available in CD-ROM also. Presently, the database contains over 45,223 unique journal titles with 2.68 lakhs holdings data of more than 564 libraries of major universities, S&T institutions, R&D units of industries, higher institutes like IISc, IITs and professional institutes in S&T disciplines within the country (NISCAIR).

The National Social Science Documentation Centre (NASSDOC) also brought out a number of union catalogues in two series. One series is devoted to periodicals covering bulletins, journals, magazines, newspapers, etc., and the other series is devoted to serials covering annual reports, annuals, advances, handbooks, etc. The lists of both the series are given below (Krishan Kumar).

Union Catalogue of Social Science Periodicals

i)   *Union Catalogue of Social Science Periodicals – Andhra Pradesh.* 1974.

ii)   *Union Catalogue of Social Science Periodicals – Assam.* 1976.

iii)   *Union Catalogue of Social Science Periodicals - Bihar.* 1976.

iv)   *Union Catalogue of Social Science Periodicals- Delhi.* 1973.

v)   *Union Catalogue of Social Science Periodicals – Gujarat.* 1976.

vi)   *Union Catalogue of Social Science Periodicals - Jammu and Kashmir.* 1976.

vii)   *Union Catalogue of Social Science Periodicals – Karnataka.* 1973.

viii) *Union Catalogue of Social Science Periodicals - Kerala.* 1974.

ix)   *Union Catalogue of Social Science Periodicals - Madhya Pradesh.* 1975.

x)   *Union Catalogue of Social Science Periodicals –Maharashtra.* 1975.

xi)   *Union Catalogue of Social Science Periodicals – National Library (Calcutta).* 1976.

xii)   *Union Catalogue of Social Science Periodicals – Orissa.* 1975.

xiii) *Union Catalogue of Social Science Periodicals – Punjab, Haryana and Himachal Pradesh.* 1974.

xiv)   *Union Catalogue of Social Science Periodicals –Rajasthan.* 1976.

xv)   *Union Catalogue of Social Science Periodicals –Tamil Nadu.* 1975.

xvi)   *Union Catalogue of Social Science Periodicals – Uttar Pradesh.* 1975.

xvii) *Union Catalogue of Social Science Periodicals – West Bengal.* 1975.

Union Catalogue of Social Science Serials

i)   *Union Catalogue of Social Science Serials – Andhra Pradesh.* 1976.

ii)   *Union Catalogue of Social Science Serials – Assam.* 1976.

iii)   *Union Catalogue of Social Science Serials - Bihar.* 1976.

iv)   *Union Catalogue of Social Science Serials- Delhi.* 1975. 3 Parts.

v)   *Union Catalogue of Social Science Serials – Gujarat.* 1976.

vi)   *Union Catalogue of Social Science Serials – Karnataka.* 1976.

vii)   *Union Catalogue of Social Science Serials - Kerala.* 1976.

viii) *Union Catalogue of Social Science Serials - Madhya Pradesh.* 1975.

ix)   *Union Catalogue of Social Science Serials –Maharashtra.* 1976.

x)   *Union Catalogue of Social Science Serials – National Library (Calcutta).* 1976.

xi)   *Union Catalogue of Social Science Serials – Orissa.* 1975.

xii)   *Union Catalogue of Social Science Serials – Punjab, Haryana and Himachal Pradesh.* 1976.

xiii) *Union Catalogue of Social Science Serials –Rajasthan.* 1976.

xiv)   *Union Catalogue of Social Science Serials –Tamil Nadu.* 1976.

xv)   *Union Catalogue of Social Science Serials – Uttar Pradesh.* 1976.

xvi)   *Union Catalogue of Social Science Serials – West Bengal.* 1976.

The 33 union catalogues listed above cover the holdings of 550 libraries (including National Library, Calcutta) situated in 17 states and two union territories. The data of all these unified catalogues has not yet been combined to bring out a unified national union catalogue of social science periodicals and serials. As a result, often, for locating a periodical or a newspaper a number of union catalogues are to be searched.

For providing referral service regarding periodicals you may refer to these sources or to NISCAIR for scientific and technological periodicals, and NASSDOC for social science periodicals. American Library as well as British Council may also be referred to in case the periodicals are not available in India.

Union Catalogue of Books

This type of publication is less common. The publications which are there are really very useful. One very important union catalogue of books is being described below.

The National Union Catalog Pre-1956 Imprints: A Cumulative Author List Representing Library of Congress Printed Cards and Titles Reported by Other American Libraries, Compiled and Edited with the Cooperation of the Library of Congress and the National Union Subcommittee of the Resources Committee of the Resources and Technical Services Division, American Library Association. London: Mansell, 1968-1981. 754 vols. Print.

The catalogue provides the main entry of each book, along with the symbol of libraries having the book. It is 'a repertory of the cataloged holdings of selected portions of the cataloged collections of the major research libraries of the United States and Canada, plus the more rarely held items in the collections of selected smaller and specialized libraries'.

It includes around one million titles available in 800 North American libraries. (Krishan Kumar 288). Undeniably, it is a monumental work comprising 528,000 pages and a veritable source of information on books from all parts of the world. As the title indicates the catalogue lists books published before 1956. For keeping the work updated 10-yearly supplements are being issued. *National Union Catalog 1956-1967* was published in 1970 by Roman and Littlefield in 1970 in 125 volumes.

Countries like New Zealand, Finland and Vietnam have also brought out their national union catalogues. Till now we do not have any national union catalogue of books.

Apart from union catalogue of books and serials, there are union catalogues of manuscripts, non-book materials, audio-visual materials, early printed books, etc. Some examples are given below.

i)   *NUC: N : National Union Catalogue, Non-book Materials, a Union List of Non-book Materials with Locations recorded on the National Bibliographic Database*.Canberra : National Library of Australia, 1988-1996. Microform.

ii) *National Union Catalogue of Audio Visual Materials.* Hawthorn, Vic. : Swinburne College of Technology, 1980-.

iii) *National Union Catalog of Manuscript Collections.* Ann Arbor, Mich. : J. W. Edwards, 1962-1994.

iv) *National Union Catalogue of Incunabula and Early Printed Books in India / compilers, Ram Dular Singh, Gauri Shankar Singh, Sunil Kumar Chatterjee.* Calcutta : Bibliographical Society of India, 1981.

So far, we have talked about union catalogues which are available in print form, microform, etc. Now, we are going to talk about union catalogues which are available online.

i) *OCLC Worldcat*

It is the biggest online union catalogue of the world and connects to the collection and services of more than 10,000 libraries of the world. The database contains bibliographic records of 1.5 billion items comprising books, music CDs, videos, downloadable audiobooks, article citations with links to the full-text, authoritative research materials such as documents and photos of local or historic significance, and digital versions of rare items that are not available to the public. The resources of the library are available in many languages. It is to be noted that while searching you are connected to the collections of many libraries at once. By becoming a member you can post your review of an item or contribute factual information about it. The most interesting part is that anyone can search the catalogue free of charge.

ii) DELNET (Developing Library Network, New Delhi) has a number of online databases searchable by its members only. Some of them are listed below.

a) *Union Catalogue of Books*

It is an online union catalogue of books available to its member-libraries. It is being continuously updated. The information can be retrieved by author, title, subject, conference, series, etc. It has 1,11,16,937 bibliographic records. The request for inter-library loan can be placed through the online system.

b) *Union List of Current Periodicals*

This union list covers current periodicals in science and technology, social sciences and humanities. The database has 33,916 periodicals and is updated annually with the addition of new titles or deletion of old titles. It is a major resource for document delivery service and is available online to DELNET members only.

c) *Union Catalogue of Periodicals*

The union catalogue contains full holdings data of the libraries. At present the database has 20,235 records.

d) *CD-ROM Database*

This database is under creation with the data of CD-ROM holdings of its member libraries. At present it has 19,324 records.

e) *Database of Theses and Dissertations*

This database is being created with the data of theses and dissertations submitted to Indian universities. The database has 48,621 records.

iii) *IndCat: Online Union Catalogue of Indian Universities*

It is a product of INFLIBNET and includes books, theses and journals available in 143 university libraries in India. For each entry it provides bibliographic description, location and holdings information. A web-based interface is provided for easy access to the merged catalogues. It is a major source of bibliographic information that can be used for inter-library loan, collection development, copy cataloguing and retro-conversion of bibliographic records. The catalogue harbours bibliographic records of books, (1,22,59,389) theses, (2,37,393) current serials (35,209) and serial holdings (50,164).

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

3) Enumerate the components that constitute an entry of a union catalogue of serials.

    ....

    ....

    ....

    ....

    ....

4) Briefly describe National Union Catalogue of Scientific Serials in India.

    ....

    ....

    ....

    ....

    ....

Online Sources

Sometimes you cannot find a piece of information in encyclopaedias, dictionaries and other reference books that you have in your library because they were published years ago and are now outdated and their scope might be limited, etc. To obviate the difficulty you can direct the information seeker to some websites in the Internet which in most cases provide you the latest information. A few such websites are mentioned below.

i) *Wikipedia*

It is an online encyclopaedia and searchable free of cost. It had as many as 3,395,857 articles in English on 28 August 2010 and on 29 August 2010 the number rose to 3,395,907 indicating that within a single day as many as 50 articles have been added. As far as coverage is concerned it covers all subjects, and by far it is the biggest encyclopaedia in terms of coverage. It is being updated all the time.

Its contents include: i) Featured content, ii) Overviews, iii) Portals, iv) Lists, v) Glossaries, vi) A-Z index, and vii) Categories.

Featured content – It represents the best that Wikipedia has to offer. It comprises articles, pictures, and other contributions that showcase the polished result of the collaborative efforts that drive Wikipedia. All featured content undergoes a thorough review process to ensure that it meets the highest standards.

Overview – It is a survey that indicates what is covered or included in an area. For example in the area of reference works it covers - Almanac • Atlas • Citation index • Database • Dictionary • Encyclopaedia • Gazetteer • Glossary • Handbook • Magazine • Newsgroup • Newspaper • Scientific journal • Thesaurus • Web directory • Wikipedia.

Portal – It is an introductory page for a given topic. It complements the main article of the subject by introducing the reader to key articles, images, and categories that further describe the subject. Portals also help editors find related projects and things they can do to help improve Wikipedia. At present there are 585 portals.

Lists – These are lists of topics. Some of them are lists of other lists. A list of topics is a non-comprehensive list of article lists, arranged by topics. Example : **General reference lists** • Abbreviations • Collective nouns • Common misconceptions • Common misspellings • Etymologies • Library and information science • Pairs • Postal codes • Topics by country • Unusual articles.

Glossaries – These are lists of specialised or technical words accompanied with their meanings. An example is given below.

Arts [All words ending with –graphy]

- Cartography - the art and field of map making

- Choreography - the art of creating and arranging dances or ballets

- Collagraphy - In printmaking, a fine art technique in which collage materials are used as ink-carrying imagery on a printing plate.

- Cryptography - the art of disguising information

- Lithography - a planographic printing technique.

- Photolithography - a method for micro fabrication in electronics manufacturing.

- Photography - the art, practice or occupation of taking and printing photographs.

- Serigraphy - a printmaking technique that uses a stencil made of fine synthetic material through which ink is forced.

- Tasseography - the art of reading tea leaves

- Thermography - thermal imaging.

- Tomography - three dimensional imaging

- Typography - the art and techniques of type design

- Videography - the art and techniques of filming video.

- Vitreography - In printmaking, a fine art technique that uses glass printing matrices.

- Xerography - a means of copying documents.

A-Z Index – This index designed as Aa, Ab, Ac, … AA, AB, AC, ….is case sensitive. Pages under Aa will be different from the pages under AA. For example, if you click Aa it will show you the following and more.

Aa	*Aa!*	*Aa! Megami-sama*
Aa! Megami-sama!	*Aa! Megami-sama: Sorezore no Tsubasa*	*Aa! Megamisama*
Aa! Megamisama!	*Aa'id 'Abdullah al-Qarni*	*Aa'id 'Abdullâh al-Qarnî*

If you click under AA, it will show you the following and more:

AA	to	Adrian Zabala
Adrian Zackheim	to	Alfred M. Gatlin
Alfred M. Gray	to	Angel Islington
Angel Ivanov	to	Arrow theorem
Arrow to the Heart	to	BCS Hong Kong Section

Categories inclusive of other features like cross references, lists, and infoboxes help a user to find information even if she does not know what exists and what it is called. The broad categories are as follows:

Wikipedia's contents: Categories		
General reference **Culture and the arts** **Geography and places** **Health and fitness**	**History and events** **Mathematics and logic** **Natural and physical sciences** **People and self**	**Philosophy and thinking** **Religion and belief systems** **Society and social sciences** **Technology and applied sciences**

Sister Wiki Projects

Wikipedia Foundation has quite a few sister projects. Information about some of them are recorded below as they are quite useful for reference as well as referral services.

ii) *Wikinews*

A group of volunteers whose mission is to present and contribute reliable, unbiased and relevant news items. All the content is released under a free license. By making the content perpetually available for free redistribution and use, the volunteers hope to contribute to a global digital commons. Wikinews stories are written from a neutral point of view to ensure fair and unbiased reporting.

iii) *Wiktionary*

It is a collaborative project to produce a free-content multilingual dictionary. Being a lexical companion to *Wikipedia,* it has grown beyond a standard dictionary and now includes a thesaurus, a rhyme guide, phrasebooks, language statistics, and extensive appendices. Each entry includes definitions, etymologies, pronunciations, sample quotations, synonyms, antonyms, and translations. The dictionary is being updated and edited by volunteers everyday. On 29 August 2010, the dictionary had 1,893,321 entries with English definitions. It is an extremely useful dictionary for finding out the meanings of most recently-coined words.

iv) *Wikiquote*

It is a free online compendium of sources of quotations from notable people and creative works in every language, includes translations of non-English quotes, and provides links to *Wikipedia* for further information. Volunteers are allowed to contribute and edit the quotations.

v) *Wikibooks*

It is a collection of open-content textbooks. On 29 August 2010, it had 2,476 books. Volunteers are allowed to edit the books.

vi) *Wikisource*

It is an online library of free-content publications, collected and maintained by *Wikipedia* community. On 29 August 2010, it had 152,962 texts in the English language library.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

5)   Briefly describe *Wiktionary.*

....

....

....

....

....

Answer-providing Websites

We are just mentioning two websites where you can post your query and in most cases get the answers within a short time.

i) *AllExperts.com*

It is the oldest and largest free question and answer service on the Internet.

ii) *The AnswerBank*

From this website also you get answers to your questions. You can also see the answers to previous questions put by people.

Internet

When retrieval of information on a particular item fails despite using all the sources mentioned above you may try the Internet. In majority of the cases you are likely to find something which can serve your purpose or provide a lead that may help you to find something more.

Tools You are to Create

Printed and online sources notwithstanding, referral service does not become fully effective until the professional providing referral service creates some tools herself/himself. Take the case of a rural librarian. The rural library serves a cluster

of villages inhabited by mostly farmers and majority of them are illiterate. They have got numerous information needs such as:

i) The place wherefrom good quality seeds or new variety of seeds can be obtained.

ii) The suppliers of various agricultural implements (tractors, power tillers, pump sets, etc.) in nearby areas.

iii) The repair shops or mechanics for agricultural implements.

iv) The sellers of fertilizers, pesticides, etc. in nearby markets.

v) The facilities available for irrigation.

vi) The buyers of food grains (retail and wholesale) and other agricultural products.

vii) The availability of cold storage facility in nearby areas.

viii) The bank/s wherefrom agricultural loan can be obtained.

ix) What course a meritorious student of a village can pursue after completing higher secondary education.

For the above mentioned information needs, most of the information will not be available in the printed and online sources as all the above mentioned needs pertain to local information. The librarian will have to collect the information and make an inventory and update it as and when needed.

Normally illiterates do not approach a library, as they think that a library is meant for literate people only. If they can be convinced that a library is also an information centre and they also can get their required information then they will approach the library and ask for information. For answering them the librarian will have to create an inventory by gleaning information from various people. If you analyse the questions being asked, you will find that mostly they belong to: i) people like doctors, mechanics, labourers, smiths, plumbers, electricians, astrologers, masons, village head, and ii) organisations like the office of the block development officer, post office, banks, courts, specialised shops that are selling fertilisers, pesticides, agricultural implements, medicines, etc. This apart there may be inquiries on transport, place, etc. If you make three inventories – one for people, another for organisations, and the third one for miscellaneous inquiries, your job will gradually become easy and effective.

4.2.5 Institutions

Libraries, information centres, document supply centres, and many other institutions provide information service. With a few examples we can try to show when you can refer a clientele to a library, information centre, document supply centre, etc.

Case 1 – Somebody is looking for a book published from India in the early 19th century. In such a case you can refer the user to our National Library, Asiatic Society Library, British Library, and India Office Library. It is quite likely that s/he will get the book from any one of these libraries.

Case 2 – A person has a Portuguese document. S/he wants to get an English translation of the same. You can refer the person to National Institute of Science Communication and Information Resources (NISCAIR) or School of Language, Literature and Culture Studies of Jawaharlal Nehru University (JNU). NISCAIR has a large panel of translators. Anyone knowing Portuguese in that panel will be able to do the job. JNU teaches a large number of languages of the world including Portuguese. Any staff teaching Portuguese language is likely to provide the translation.

Case 3 – A researcher needs a paper published in *Philosophical Transactions of the Royal Society* published in 1670. For such a request you can safely refer her/him to British Library Document Supply Centre.

The three cases discussed above clearly show that different institutes need to be referred to for different type of services. A referral librarian can correctly refer if s/he has very good knowledge of the resources and services of various institutions.

4.2.6 Persons

By persons we mean not only literate and highly educated persons but also other persons who may be illiterate, semi-literate or moderately literate but knowledgeable. As a librarian you are to identify those people to whom you can refer a customer for information or a document. These persons may be professionals like doctors, lawyers, scientists, technologists, technicians, brokers, librarians, journalists, etc. You can identify these people by going though biographical reference sources, directories of professionals, etc.

4.2.7 Equipping Yourself for Referral Service

Nobody becomes a referral librarian overnight. Becoming a reference librarian is comparatively easy inasmuch as reference service is provided on the basis of resources available in the library. On the other hand referral service is provided on the basis of what is available outside the library. As such you are to guide the customer to other libraries, people, organisations, websites, etc. You can guide them when you have full knowledge of outside sources. For gathering that knowledge you are to work hard and use as much as possible the aforesaid resources and create tools yourself.

4.3 SUMMARY

Initially we have tried to give you an idea as to how referral service began at the National Referral Centre for Science and Technology in the Library of Congress. With the establishment of this centre it became clear what would be the function of a referral centre and what type of services it would provide. The definition of 'information resource' in the context of referral service has been reproduced. The terms 'referral centre' and 'referral service' have been defined and the scope of referral service has been outlined. The need for referral service has been explained with examples. For rendering referral service various printed and online tools are essential. Mention has been made of a large number of union catalogues, and the components constituting the entry of a union catalogue have been explained. A large number of union catalogues of books are nowadays available online. Several of them (both Indian and foreign) have been described. Quite a few online sources like *Wikipedia* and *Wiktionary* which act as highly powerful

reference sources have been described along with a few others. Two websites that answer questions put by anybody have also been described. The tools that are to be prepared by the referral librarian have also been discussed. Users are quite often referred to institutions and knowledgeable persons. These two items have also been touched upon. In general LIS courses, no formal training is given for referral librarianship. That is why a short guideline has been provided whereby one can prepare oneself for the job.

4.4 ANSWERS TO SELF CHECK EXERCISES

1) The four areas of responsibility with which the National Referral Centre was entrusted were the:

   i) identification of all significant information resources in the fields of science and technology;

   ii) acquisition, cataloguing and correlation of substantive and procedural data defining the nature, scope and capabilities of these resources;

   iii) provision of advice and guidance about these resources to any organisation or individual requiring access to them by responding to requests for referral assistance and by publishing directories and guides in selected subject field; and

   iv) exploration, through actual operating experience, of the roles and relationships that exist or should exist among the many elements of the scientific and technical information complex.

2) No library in the world possesses enough resources to answer all the queries of the users or meet all the demands of the users. To help the users various tools like printed as well as online union catalogues have evolved whereby a librarian knows about the resources of other libraries and accordingly informs the user. This process helps the users a great deal. There are many cases in the world to show that referral service has been immensely useful to the researchers and other users.

3) A typical entry of a union catalogue of serials includes the following:

   i) The title of a periodical.

   ii) The sponsor.

   iii) The place of publication.

   iv) Year of starting of the periodical as well as the year of ceasing (for ceased periodical) are mentioned with the corresponding volume numbers.

   v) The availability of the volumes in the library. Incomplete as well as missing volumes are also indicated.

   vi) The historical elements like changes in the title, sponsor, volume numbering, place of publication, etc. are mentioned.

   vii) Libraries having the periodical along with the volume numbers are mentioned as the last item.

4) INSDOC (now NISCAIR) has brought out five serials catalogues of individual libraries and 13 regional union catalogues. The holdings' records of all these combined together resulted in the *National Union Catalogue of Scientific Serials in India (NUCSSI)*. It was published in 1988 in print form in four volumes and recorded holdings data of about 36,000 serial titles held in about 800 libraries in India. It has been updated till 2001, and is available in CD-ROM also. Presently, the database contains over 45,223 unique journal titles with 2.68 lakhs holdings data of more than 564 libraries of major universities, S&T institutions, R&D units of industries, higher institutes like IISc, IITs and professional institutes in S&T disciplines within the country.

5) It is a collaborative project to produce a free-content multilingual dictionary. Being a lexical companion to *Wikipedia,* it has grown beyond a standard dictionary and now includes a thesaurus, a rhyme guide, phrasebooks, language statistics, extensive appendices. Each entry includes definitions, etymologies, pronunciations, sample quotations, synonyms, antonyms, and translations. The dictionary is being updated and edited by volunteers everyday. On 29 August 2010, the dictionary had 1,893,321 entries with English definitions. It is an extremely useful dictionary for finding out the meanings of most recently-coined words.

4.5 KEYWORDS

Omnifarious : Of all kinds, varieties and forms.

Union Catalogue : A union catalogue is a combined catalogue depicting the collections of a number of libraries.

4.6 REFERENCES AND FURTHER READING

DELNET. Web. 29 September 2011. <http://delnet.nic.in/>.

IndCat: Online Union Catalogue of Indian Universities. Web. 29 September 2011. <http://indcat.inflibnet.ac.in/indcat/>.

Krishan Kumar. *Reference Service*. 2nd rev. ed. New Delhi: Vikas Publishing House, 1980. 351-353.Print.

Mcfarland, M. W. "The National Referral Center: Science and Technology in the Library of Congress". *Aslib Proceedings* 16(1993):258-268.Print.

National Dairy Research Institute. Web. 25 August 2010.<www.karnal.gov.in>.

National Neuroscience Information Centre. Web. 25 August 2010.<www.nimhans.kar.nic.in>.

NISCAIR. Web. 29 August 2011. <http://www.niscair.res.in/>.

OCLC WorldCat. Web. 29 August 2010.<http://www.worldcat.org>.

O'Hara, M. B. "Symposium on Information Science. V. The Microbiologist and the National Referral Center". *Bacteriological Review* 29(1965): 554-555.Print.

"Referral Centre" Web. 25 August 2010.<http://www.infosciencedictionary.com/>.

"Referral". Reitz, Joan M. *ODLIS – Online Dictionary of Library and Information Science*. Web. 25 August 2010.<http://lu.com/odlis/search/cfm>.

Wikipedia. Web. 29 August 2010.< http://en.wikipedia.org>.

BLOCK 2   SPECIAL PRODUCTS AND SERVICES

Introduction

Block 2 (Unit Nos. 5-7) covers special products and services. The preparation and production of such products involve analysis, synthesis and consolidation of information for definite user groups. The need for such products and services was felt because of overflow of information on one hand and complex nature of information on the other. It is also observed that most of the existing literature in science, technology, health, business and related fields is written by experts and for the experts in the field. This results in under utilisation of information by non-experts who may benefit from this information. Purpose of these special products and services is to present the information to target users in such a form and style which is understandable and acceptable to them. In other words, these special products and services aim to provide the right information for the right person in the right form and at the right time.

Unit 5 "Information Analysis" deals with the concept of information analysis and describes the processes involved in information analysis and synthesis. This Unit also covers the activities of some of the existing Information Analysis Centres and compares them with libraries and information/documentation centres.

Unit 6 is on "Information Consolidation and Repackaging". It deals with the evolution of the concept of information consolidation and repackaging and the processes involved in information consolidation. This Unit describes the values and benefits of information consolidation and repackaging activities and also the resultant products and services. This Unit also provides some examples of Information Analysis and Consolidation (IAC) products produced in India.

Unit 7 deals with different categories of information analysis and consolidation products. It covers in detail the need, preparation and production of IAC products, such as reviews and related publications, state-of-the-art reports, trend reports, handbooks and technical digests.

UNIT 5   INFORMATION ANALYSIS

5.0   OBJECTIVES

After reading this Unit, you will be able to:

• explain the concept of information analysis;

• discuss that the concept also implies the process of synthesis which is essentially a process of condensation of analysed information;

• describe the processes involved in information analysis and synthesis;

• highlight the activities of information analysis centres; and

• identify some of the R&D centres in India and abroad, where information analysis functions are undertaken.

5.1   INTRODUCTION

Twentieth century witnessed industrial revolution and tremendous increase in research and development (R&D) activities in the area of science and technology (S&T). Increase in R&D activities resulted in the exponential growth of publications. The research results were being published in a wide range of publications such as primary periodicals, research reports, conference proceedings, theses, dissertations, patents, etc. Researchers, due to sheer amount of information scattered over wide range of sources, found it difficult to keep track of published knowledge in their respective field of research. To solve these problems libraries, particularly scientific and technical libraries and information

centres attached to R&D organisations, started collecting and organising the latest published knowledge in their field of specialisation and bringing it to the notice of the users on regular basis using various information services. These services, which special libraries and information centres provided, could be broadly grouped into two levels of services. At the basic level, information centres disseminated information about material acquired by them, answered reference queries and provided current awareness service from latest journals to keep users informed of the current developments in a particular discipline. At the next level, special libraries and information centres offered complex literature searches in specific subject fields and also carried out retrospective searches and provided bibliographies, CAS and SDI services to individuals or group of users based on the user's profile. These information centres also indexed, abstracted and extracted information to disseminate it to users in response to the requests as well as in anticipation.

It was also realised that the services provided by special libraries and information centres were not sufficient particularly in newly emerging and specialised disciplines. Secondly, the services provided by information centres were mainly based on published sources and did not cover information which was not yet published and proprietary information. In other words, these services were not providing total state-of-knowledge in any particular subject area. The need was felt for different services which would compensate for that information which was not readily available in published sources. In addition, the need was also felt for information to be packaged in suitable formats which could be used immediately for carrying out research or for solving any problem in front line areas of research. This requirement led to the development of 'Information Analysis Centres' and 'Data Centres' in highly specialised subject fields. These information centres provided highly specialised services or so called value- added services which involved analysis, synthesis and evaluation of information for the users. This evaluated information was condensed, consolidated and repackaged in appropriate form for a well defined user group. In this Unit, you will study in detail the need, functions and products of information analysis centres.

5.2 NEED FOR INFORMATION ANALYSIS AND SYNTHESIS

As you are aware, after World War II, there was a tremendous increase in R&D activities in the areas of S&T. This resulted in corresponding increase in science and technology publications. Too much of information was being generated on a topic that it led to information overload and information explosion resulted in proliferation of information sources. Many of these sources were either redundant and/or of uneven quality and some were of questionable quality. Soon, it was realised that the indexing and abstracting services provided by information centres were no longer sufficient to meet the growing needs of the researchers, particularly in the areas of science and technology. Information explosion can be seen by taking an example of discipline 'chemical sciences'. The international abstracting periodical 'Chemical Abstracts', started its publication in 1907 it took 67 years (i.e. in 1974) to publish its first millionth abstract. By 1970s, the research output increased so much that 'Chemical Abstracts' was publishing one million abstracts in a period of less than two years. The researchers had to spend lots of time and

effort to retrieve the required information, even from this highly condensed device. Moreover, in indexing and abstracting services, each document covered, stands separate, disjointed from other documents, except it is placed along with other similar items, through subject grouping or by some system of classification. These publications do not provide a coherent picture of the overall development or current status of a particular subject. Thus, researchers needed was a value-added reliable service, such as critical analysis of the state-of-knowledge in a given subject or its sub-discipline, which they could use immediately in their area of research with certain degree of confidence, without wasting much time and effort. Apart from researchers, the decision makers, at all levels, also faced lack of appropriate information which they could comprehend, assimilate and use with some amount of confidence at their own level and within the framework of their own circumstances. The inference is that while on the one hand there was overflow of information, on the other hand, it was not being properly organised, evaluated, packaged and presented in a form and format tailored for different categories of users such as researchers or managers. In other words, the users needed a value-added reliable service, which involved analysis, synthesis and evaluation of information pertaining to clearly defined specialised field or pertaining to specific mission, packaged in appropriate form for different categories of users. Thus, the need for information analysis was felt mainly due to three reasons viz., i) overflow of information; ii) scattering of information; and iii) uneven quality of information which required considerable amount of sifting and filtering to retrieve quality information.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1) Explain the need for information analysis and synthesis.

....

....

....

....

....

5.3 INFORMATION ANALYSIS CENTRES

The above mentioned requirements led to the setting up of information analysis centres. In United States information analysis centres were created to overcome three major problems in scientific and technical information transfer namely:

i) Variety of ways in which information was originated, such as through primary journals, secondary journals, letters, trip reports, technical reports, person-to-person, conference proceedings, through long distance communication, etc. and this information was available in different time lapses;

ii) Scientists and engineers did not have enough time to sift through this mass of information to select essential information to address their emerging requirements. They preferred to create new data or information from the

laboratory rather than submitting themselves to the drudgery of ploughing through the plethora of stored information; and

iii) Management's critical need to know what the state-of-the-art is at any given time for particular subject area.

The information analysis centres in United States came up in the areas where there was

i)   considerable research and development activity;

ii)   large amount of information being generated; and

iii) urgent need for technological progress to be made.

By 1970s, about 200 information analysis centres came up in United States, of which about 170 centres were sponsored by U.S. Federal Government in areas of defence sciences, atomic energy, health, agriculture and education. Private sector also created information analysis centres, some to serve only a particular company and others to serve groups.

5.3.1 Difference between a Library, Information Centre and Information Analysis Centre

In order to know, the difference between information analysis centre and other information services, which are available through libraries and information centres, let us look at the working definitions of library, information centre and information analysis centre. The definitions are as follows:

Library: A library is a collection of books and similar material organised and administered for reading, reference and study.

Information Centre: An organisation which selects, acquires stores and retrieves specific information in response to requests; announces, abstracts, extracts and indexes information; and disseminates information from documents in response to requests or in anticipation.

Information Analysis Centre (IAC): An organisation directed towards the collection of technical information and data in a specific area and its evaluation and filtering into a form of condensed data, summaries and state-of-the-art reports.

The basic process involved in indexing, abstracting and extracting of information is '**analysis of information**'. In indexing activities, it is '**subject analysis**', in abstracting and extracting services it is '**content analysis**'. Here, no critical evaluation is carried out in the basic contents of the documents. The resultant product is factual, non-critical, or/and non-evaluative. In information analysis centre, the emphasis is on '**evaluation**' of the contents. Information analysis centres gather everything known about a clearly defined subject field, comprising of published as well as unpublished information. They analyse and evaluate this information, condense and repackage it in a appropriate form for a well defined user group and disseminate to that user group. Information analysis centres not only utilise published literature but also include trip reports, telephone calls, informal communications in the form of letters and face-to-face contact with experts, etc.

Compression and analysis are done by experts whose main objectives are to determine the recent developments in a particular field. This is the basic concept behind an information analysis centre. IAC is an organisation of one or more scientists, engineers and information specialists, committed at least on part time basis to provide a specialised audience the intellectual services of acquiring, evaluating, integrating, condensing and analysing available information or data pertaining to a specific mission. The centre provides answers to technical questions to its specialised audience with authoritative and timely data arrays, analyses, monographs and state-of-the-art reports, etc.

Information Analysis Centres can be identified by the following attributes:

- They are oriented towards a body of information in a clearly defined and specialised subject or mission. They have limited appeal and audience.

- Their primary purpose is to select, evaluate, analyse and synthesise information from the literature as well as from informal sources.

- They serve a defined clientele, with specific information needs stemming from the problems they are working on. The specific focus of their clientele changes often.

- They are more often staffed by subject specialists, which is usually hard to get.

- They are expensive and not easy to manage.

- They produce different products and employ different dissemination methods.

5.4 INFORMATION ANALYSIS AND SYNTHESIS: DEFINITION

"Information Analysis is *a process of* determining and *isolating the most salient information* conveyed by a given information source and separating this information source into its constituent elements on the basis of predetermined evaluative criteria".

During analysis, the contents of selected source(s) are studied to identify salient information conveyed by the source(s). Then the relevant information is extracted, assessed and verified. Finally the extracted information is organised and sorted into headings and sub-headings according to some pre defined scheme.

On the other hand, "Synthesis is a process of *condensation* and *distillation of analysed information* from one or more sources and presentation of information in a *new arrangement* or *structure* with an *interpretative* or *evaluative point of view".*

During synthesis the analysed information from many sources is merged and arranged. Here information is condensed and presented in a new arrangement with an interpretive or evaluative point of view.

5.5 PROCESSES IN ANALYSIS AND SYNTHESIS

Information analysis and synthesis activities are not new. Their origins can be traced back to 18th and 19th centuries. However, their systematic development and organisation is a latter phenomena caused by information explosion in science

and technology and the need for evaluative, critical information experienced by research workers, decision makers and problem solving research projects or missions. Certain basic operations need be performed before the actual work of information analysis is initiated. These **preliminary operations** constitute the following:

- Study of the subject area or mission in which the information will be analysed.
- Study of the potential user and uses for which the analysis will be done.
- Organisation and systemisation of the contents or characteristics of the subject or mission, i.e. a prior creation of a table-of-contents, classification, typology, or analysis and synthesis.
- Consideration of objectives, resources and constraints of the system or work within which analysis and synthesis is performed.
- Determination of evaluation criteria for use as the base for analysis and synthesis.

Without proper and specific guidelines on the above mentioned five areas no meaningful and rational analysis and synthesis can be performed. After establishing the proper guidelines, the next step is selection of material for information analysis and synthesis.

5.5.1 Selection of Information Sources

Selection is an important component of building information sources for information analysis centre and it needs proper attention. Selection of information sources involves three important elements. They are: 1) Selection policy, 2) Selection aids, and 3) Selection process.

1) Selection policy is a set of criteria and principles adopted and used by an information analysis centre for decisions on acceptance and rejection of information sources.

2) Selection aids are the tools employed in selection, evaluation and verification of the sources.

3) Selection process involves the people, methods and procedures used in arriving at decision.

It may be emphasised here that the selection policy must focus on user needs, statement about subjects, problem areas or missions to be covered. There should be a clear understanding of the information sources to be acquired and the criteria for their evaluation. Selection process is a judgement. It is a series of events which result in a decision either acceptance or rejection of given materials for information analysis and synthesis. Therefore, it must be accomplished by information specialists or experts in given subjects and / or a committee involving specialists, experts and users. This ensures better results. Of course, there are varieties of tools which can aid the selection process. For instance, one of the important sources is *Collection Development* by W. A. Katz. Several bibliographies exist on specialised subjects which may be used for the purpose.

After the preliminary operations mentioned above are completed, the actual work relating to information analysis and synthesis is initiated.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

2)   What are the pre-requisites for organising evaluative and critical information services like information analysis and synthesis?

....

....

....

....

....

5.5.2   Steps in Analysis and Synthesis

On completion of the preliminary operations, the analysis proceeds on the following lines:

• The first step happens to be *familiarisation* with the *total contents* of *a given document* or *set of documents acquired by the centre.*

• The contents acquired are *sorted* or *categorised* on the basis of subject contents of documents on a tentative manner using evaluative criteria, tools like classification schemes such as DDC, UDC, thesaurus or subject headings lists, such as LCSH, MESH, SHE, etc. can be used for sorting purpose (first evaluation).

• The third step is *selection* and *extraction* of the *most pertinent* or *salient features, filtering out of not needed information* and reduction of materials.

• *Verification* of the contents or data in *individual extracts* (second evaluation) is the main objective of this step.

• *Sorting of extracted information* into *classes* and *sub-classes (headings* and *sub-headings) according to the table-of-contents, classification scheme* or *typology* for the *specialised subject* or *mission.*

The next part i.e. the synthesis consists of the following steps:

• Comparative arrangement and merging of extracted information within each class and sub-class.

• Comparative evaluation of different extracts or data in each class or sub-class (third evaluation).

• Resolution of conflict (if any) or decision to present conflicting information in synthesis.

• Compression of the information into a structure and form suited to intended users and uses and in accordance to objectives, resources and constraints of the system or centre as a whole.

• The evaluation of the final product according to criteria related to users and use (fourth evaluation).

Let us explain the processes of analysis and synthesis by taking an example from an IAC product such as 'critical review of a subject'. For the preparation of a critical review, all the research articles published on that discipline during a specified period say for the last one year are collected and studied by the experts in that field. Only those articles which have made some significant contributions towards the progress of the discipline are selected and others are rejected. During **analysis** all the selected sources are studied and their salient features are extracted, assessed and verified. The extracted information is then organised and arranged under specified headings and sub-headings according to some predefined scheme. During **synthesis** this extracted information from all the selected sources is condensed, merged and put under proper perspective. The resultant product is a '**Review Article**' providing a narrative account of progress of the discipline during that period. In critical reviews the experts, apart from providing an overview of the state-of-the knowledge of the subject, also point out the lacunae in the research areas and suggest new areas of research that are needed to be probed.

As can be observed, the evaluation, analysis and synthesis is a four stage process comprising:

1) Evaluation of information sources (documents),

2) Verification of individual extracts or data from each document,

3) Comparative evaluation of different extracts or data in each class and sub-class, and

4) Evaluation of synthesised product or products.

It must be noted that the criteria used for evaluation in each of these four stages are different though related. All these operations require suitably qualified specialists with adequate experience and intimate knowledge of the clientele for whom the service is being provided by the IAC centre. Generally, information analysis requires considerable subject expertise on the part of the analyst. It also opens the way to new knowledge by identifying gaps in the knowledge. This leads to new areas of research and thereby new discoveries.

It has been observed that as the complexity, interdisciplinary, and technical sophistication of available information increases, less of it can be used even by decision makers and problem solvers in its original form. This certainly points to the need for analysed, value-added and evaluated information. Information analysis service is one of the value-added services. The processes by which value is added to such services are as follows:

• Selection of information from diverse sources;

• Analysis and evaluation of information;

• Extraction of relevant information keeping target users in mind;

• Integration of extracted information from many sources; and

• Presentation of information in new arrangement and form that is most suitable for the target user.

Taylor (1986) examines the work of information analysis centres in terms of his '*user-driven value-model*' and concludes that their main value-added processes are those which are involved in the assessment of *quality* (accuracy, validity, etc.) as well as with the *analysis* (evaluating, comparing and correlating, filtering, synthesising and interpreting) of information. In this connection he specially describes and analyses the work of the Purdue University IAC. Another example cited is the work of Cambridge Crystallographic Data Centre.
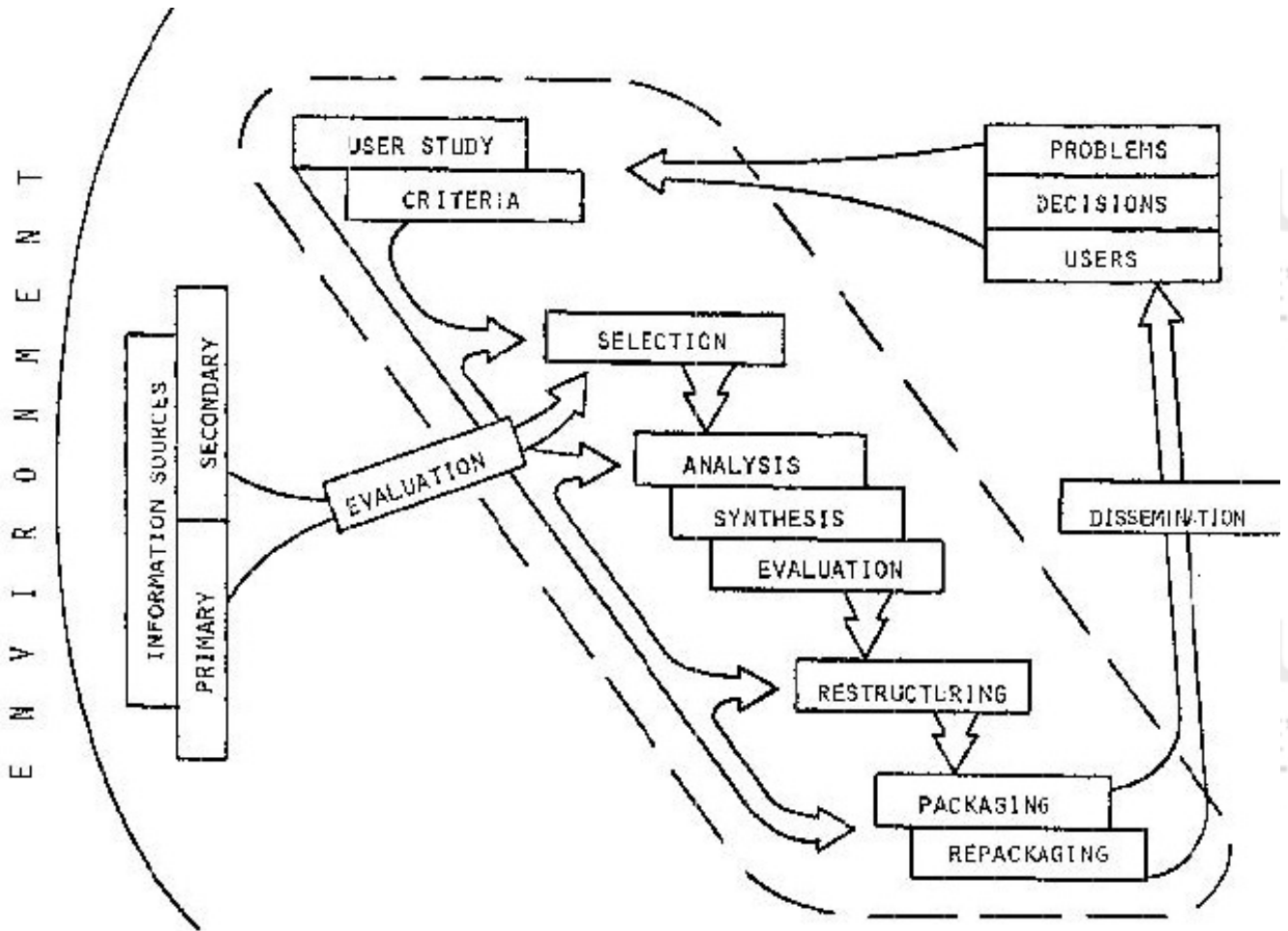
Diagram 5.1: Processes in Information Consolidation

(**Source:** Saracevic and Wood, Page 31.)

The diagram shows a triangle with horizontal bands labeled (bottom to top):

- DOCUMENTS (PRIMARY SOURCES)
- ABSTRACTS; INDEXES; SUMMARIES (SECONDARY SOURCES)
- MERGED INFORMATION
- ANALYZED AND EVALUATED INFORMATION
- SYNTHESIS; REVIEWS; STATE-OF-THE-ART; MARKET OR INDUS-INDUSTRY STUDIES; STATISTICAL COMPOSITES
- SUMMARY OF ALTERNATE CHOICES
- RECOMMENDATIONS

Vertical axis: VALUE OF INFORMATION IN DECISION MAKING & PROBLEM SOLVING

Horizontal axis: AMOUNT OF INFORMATION PRESENTED TO DECISION MAKERS & PROBLEM SOLVERS

Right side arrows: INCREASE IN CONSOLIDATION; LESS USER LANGUAGE; MORE USER LANGUAGE

Diagram 5.2: Value of Information in Decision Making and Problem Solving
(**Source:** Saracevic and Wood, Page 51.)

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

3)   Briefly describe the significant steps involved in the organisation of information analysis as a value-added information service.

....

....

....

....

....

5.5.3 Users and Uses

Users constitute the most important component of any information service or system. '*Know thy user*' is the first commandment of information services, especially provided by information analysis centres. As a rule, information systems and services succeed only if they adjust to users and their needs. This adjustment is particularly essential in the case of information analysis and synthesis service. Hence, a thorough assessment of user needs is a pre-requisite for an evaluative critical service like information analysis.

Earlier, the services of information analysis centres were mainly meant: a) for the researchers engaged in problem solving projects or missions and b) for the management to provide them briefs on the state-of-the-art of that area or mission. However, soon it was realised that if the results of scientific and technical research are to reach the people at the grass root level for the benefit of the mankind, then this analysed information is required to be consolidated, restructured and repackaged for that user group also. Consolidation of information is a process of merging information from one or more sources and presenting in a new arrangement tailored to the requirement of either researchers, planners or policy makers, students, extension workers, farmers or even common man. It was observed that information consolidation activities can be performed within the framework of information analysis centres. You will study information analysis and consolidation activities in detail in Unit 6 of this Course.

5.5.4 Information-rich Environment

This phrase *information-rich environment* is intended to sum up the situation which all information analysis centres aspire to provide. Their users being surrounded by the information they need and can use, in an appropriate form, without in any sense being swamped by it. Such an environment is particularly stimulating for innovation and creativity on the part of the users belonging to the centre. This must be one of the ultimate goals of an information analysis centre.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

4) What do you understand by the expression "information-rich environment"?

....

....

....

....

....

....

....

....

....

5.6 EXAMPLES OF INFORMATION ANALYSIS CENTRES

5.6.1 International

1) **Carbon Dioxide Information Analysis Centre (CDIAC)**: It is the primary climate change data and information analysis centre of the U.S. Department of Energy. CDIAC data holdings include records of the atmospheric concentration of carbon dioxide and other radioactive gases; the role of the terrestrial biosphere and oceans in biochemical cycles of greenhouse gases; emission of carbon dioxide from fossil fuel consumption and land use changes; long term climate trends; and effect of elevated carbon dioxide on vegetation and vulnerability of coastal areas to the rising sea level. (http://www.cdiac.ornl.gov/)

   CDIAC brings out the following information analysis products:

   - *CDIAC Newsletter*

   - *Trends Online: A Compendium of Data on Global Change*

   - *A Handbook of Methods for Analysis of the Various Parameters of the Carbon Dioxide System in Sea Water*

   - *Comparison of Carbon System Parameters at Global Carbon Dioxide Survey from 30 Cross-over Locations in the North and South Paific Ocean, 1990-1996.*

2) **DoD Information Analysis Centres**: United States Department of Defence (DoD) has the following ten information analysis centres, each dealing with specialised branch of S&T :

   - **AMMTIAC**- Advanced Materials Manufacturing and Testing Information Analysis Centre

   - **CBRNIAC**- Chemical, Biological, Radiological and Nuclear Defence Information Analysis Centre

   - **CPIAC**- Chemical Propulsion Information Analysis Center

   - **DACS**- Data and Analysis Centre for Software

   - **IATAC**- Information Assurance Technology Analysis Centre

   - **MSIAC**- Modelling and Simulation Information Analysis Centre

   - **RIAC**- Reliability Information Analysis Centre

   - **SENSIAC**- Military Sensing Information Analysis Centre

   - **SURVIAC**- Survivability/Vulnerability Information Analysis Centre

   - **WSTIAC**- Weapon System Technology Information Analysis Centre

   Defence Technical Information Centre (DTIC) is the premier provider of the technical information to scientists and engineers of U.S. Department of Defence. Information Analysis Centres' programme of DoD deals with analysis, synthesis and dissemination of relevant, timely knowledge and information. Above mentioned 10 Information Analysis Centres provide tactical relevance through direct connection to the war fighter and strategic

value through long term trend analysis and recommendations. Products such as state-of-the-art reports provide a detailed analysis of immediate, critical challenges, while Technical Inquiry Services offer a direct connection to a network of Subject Matter Experts from across government, industry and academia.

Information Analysis Centres (IACs) meet the customers on ground, thereby maintaining involvement of technical community executives and working with senior executives to solve the challenges of the day while anticipating and preparing for those of tomorrow. Through the IACs the research data is collected, reused to answer recurring challenges and analysed to identify long term trends and provide recommendations to the acquisition community. The products of IACs include newsletters, digests, research updates, state-of-the-art reports, etc. (http://www.dtic.mil/)

5.6.2 National

During last three decades a number of different types of information institutions have come into existence in India to meet the information needs of different user groups. However, there is no national level information analysis centre operating in the country. Of course, this does not mean that information analysis and consolidation activities are not performed. Such activities are undertaken by some information centres as well as R&D institutions especially in the field of science and technology in the country. However, such activities are few and are limited to some specific subjects. Some examples are listed below:

1) **The Energy and Resources Institute (TERI)**: Commonly known as TERI (Formerly Tata Energy Research Institute), the institute provides information analysis service in the field of energy mostly to its research staff. TERI publishes IAC products for the use of different levels of its user groups also. You will study about its products in Unit 6 of this Course. (http://www.teriin.org/)

2) **Centre for Monitoring Indian Economy (CMIE)**: CMIE is a private organisation which provides information analysis services in different sectors of Economy. Its *Industry Analysis Service* and *Economy Intelligence Service* are cited as examples of information analysis services. (http://www.cmie.com)

3) **IDSA (Institute for Defence Studies and Analysis)**: It "is a non-partisan autonomous body dedicated to objective research and policy relevant studies on all aspects of defence and security. Its mission is to promote national and international security through generation and dissemination of knowledge on defence and security related issues". IDSA journals, monographs, briefs and books are principal medium through which policy recommendations are disseminated. IDSA publishes briefs and papers on significant national and international events to provide background as well as analysis and recommendations. These include *Policy Briefs, Issue Briefs*, and *Special Papers*, etc. It also brings out News Digests such as *Strategic Digests, POK News Digests, Chemical and Biological News Digests* and *Weekly Digests of Pakistan's Urdu Press.* IDSA publishes comments, short and immediate analysis of recent national and international security developments. (http://www.idsa.in/)

Here, it may be mentioned that such activities have come up due to the interest and efforts of sponsoring agencies belonging to government, public and private sectors. No doubt, such activities are oriented towards the objectives of their parent bodies. Private organisations like 'Development Alternatives', 'Swaminathan Foundation' are also interested in the development of information analysis services as a support to their problem solving research projects.

5.7 SUMMARY

Information analysis and synthesis activities are not new. Their origins can be traced back to 18th and 19th centuries. However, their systematic development and organisation is a latter phenomena caused by information explosion in science and technology and the need for evaluative, critical information experienced by research workers, decision makers and problem solving research projects or missions. This type of service can only be performed by subject specialists trained in critical evaluation, consolidation and interpretation of scientific and technical information. The Unit briefly discusses the concept of information analysis and synthesis, its evolution, development and the specialised and other requirements necessary for undertaking such activity. The need for such a service and the basic processes associated with its organisation, are also described and explained in this Unit. Services of information analysis centres operating in India and abroad are described. It has been emphasised that the services of IACs are undertaken by subject specialists along with information specialists trained in the art of selection, critical evaluation, interpretation and consolidation of scientific and technical information.

5.8 ANSWERS TO SELF CHECK EXERCISES

1) The growth of information is increasing unabated in all subjects and specially in Science and Technology and is exponential in nature. Additionally it is interdisciplinary in nature and is scattered in many sources. This growth, combined with increasing rate of obsolescence; creates problems for users. One more aspect related with scientific information is that it is created by peers in the field for the use of peers. Therefore, many of the users and potential users are not in a position to use it for their requirements. Decision makers, at all levels, face lack of appropriate information which they can comprehend, assimilate and use with some amount of confidence on their own level and within the framework of their own circumstances. The inference is that, while on the one hand you have overflow of information, on the other hand, it is not being properly organised, evaluated, packaged and presented in a form and format tailored for the use of those who need it. To overcome this difficulty and to ensure fruitful use of information, the specialised services of information analysis and synthesis have become necessary.

2) The pre-requisites for organising evaluative and critical information services, such as information analysis may be summarised as follows:

   • Study of the subject area or mission in which the information analysis service will be undertaken;

   • Study of the potential user and uses for which the analysis will be done;

- Organisation and systemisation of the contents or characteristics of the subject or mission, i.e. a prior creation of a table-of-contents, classification, typology, or analysis and synthesis;

- Consideration of objectives, resources, and constraints of the system or work within which analysis and synthesis is performed; and

- Determination of evaluation criteria for use as the base for analysis and synthesis.

Proper guidelines are necessary to give meaningful information analysis service. It must be emphasised that selection and building of proper information sources, employing subject specialists with proper training in the preparation of evaluative information-added products are essential pre-requisites.

3) Information analysis is an intellectual process by which value is added to information. This includes activities such as: selection, evaluation, validation, standardisation, summarisation and synthesis. Generally, these activities will require considerable subject expertise on the part of the analyst. The outcome will not only be that the information will be more reliable but more usable, because of the standardisation, summarisation and comparison. This information analysis process also opens the way to new knowledge through the synthesis of information and an appreciation of gaps in the knowledge. The process is an important contribution to the topics of information for innovation and information updating, assessment of quality and with evaluating, comparing, correlating and filtering. It is worth noting that information analysis process demands human expertise and therefore expensive to organise. The basic objectives of any value-added information service will be considered fulfilled only if the service enables the users to generate new ideas.

4) The phrase '*information-rich environment*' is intended to sum up the situation which all the information services should aspire to, i.e. their users being surrounded by the information they need and can use, in an appropriate and accessible form, without in any sense being swamped by it. Such an environment will be particularly stimulating for innovation and creativity on the part of its users. It is felt that information analysis, synthesis and consolidation gives rise to such an environment.

5.9 KEYWORDS

Analysis of Information : The process of determining and isolating most salient information conveyed by an information source and separating this information into its constituent elements on the basis of a predetermined evaluation and other criteria.

Consolidation of Information : The process of merging or integrating information from one or more sources and presenting it in a new form and format tailored to the requirements of a specific group of users.

Evaluation of Information	:	It is a process of assessing and ascertaining the intrinsic value and validity of information on the same topic extracted from a number of sources and resolution or reconciliation of conflicting aspects.
Information Analysis Centre	:	A formally structured organisational unit specifically established for the purposes of acquiring, selecting, storing, retrieving, evaluating and analysing a body of information in a clearly defined specialised field or pertaining to a specified mission with the intent of compiling, digesting, repackaging or otherwise organising and presenting pertinent information in a form most useful to a group of users.
Value-added	:	It is a term which is widely used in respect of information services to describe information services and their attributes. It is information having value to a specific user in a specific context.

5.10 REFERENCES AND FURTHER READING

Kertsz, F. "Draft Guidelines for Establishment of Information Analysis Centres, Information Consolidation Units". *Papers Submitted to the Third Meeting of UNISIST Working Group on IAC*, Kuala Lumpur, Malaysia, September 12-16, 1983.Print.

Mudrock, J. W. "Concept, Mission, and Operation of Scientific and Technical Information Analysis Centers". *AGARD Conference Proceedings No. 78 on Information Analysis Centres*. November 18,1970. Amsterdam ,1971. Print.

Saracevic, Tefko. *A Course of Information Consolidation: A Handbook for Education and Training in Analysis, Synthesis and Repackaging Information*. Paris: UNESCO,1986 .(PGI-86/ WS/14).Print.

---, and J. Wood. *Consolidation of Information: A Handbook of Evaluation, Restructuring and Repackaging of Scientific and Technical Information*. Paris: UNESCO,1981. (PGI-81/WS/14). Print.

Taylor, R.S. *Value-added Processes in Information Systems.* Norwood NJ: Ablex Publishing Corp,1986. Print.

Third Meeting of the UNISIST Working Group on Information Analysis and Consolidation, Kuala Lumpur, Malaysia, 12-16 Sept. 1983. Print.

UNESCO. *Second Meeting September 12-15,1978: Symposium on Information Analysis and Consolidation.* Paris:UNESCO,1978. Print.

<http://www.cdiac.ornl.gov/>
<http://www.dtic.mil/>
<http://www.teriin.org/>
<http://www.cmie.com>
<http://www.idsa.in/>

UNIT 6 INFORMATION CONSOLIDATION AND REPACKAGING

Structure

6.0 OBJECTIVES

After reading this Unit, you will be able to:

- highlight the impediments and difficulties associated with fruitful use of existing information;

- explain the concepts of information consolidation and repackaging;

- trace the origins of the concepts of information consolidation and repackaging;

- assess the need for such service and explain the processes involved in information consolidation;

- discuss how the concept of appropriate or consolidated information developed in conjunction with the concept of appropriate technology and technology transfer; and

- assess the value and benefits of consolidated information to different user communities or groups.

6.1 INTRODUCTION

You have studied in Unit 5 of this course how information analysis centres came up to meet the information needs of researchers and managers working in highly specialised areas of science and technology such as defence sciences, atomic energy, health and agriculture. The information products such as critical reviews, state-of-the-art reports, information briefs, etc. and services such as technical enquiry services, provided by these centres were mainly meant for the researchers involved in active research and for the decision makers like planners and policy makers.

Soon, it was realised that for social and economic development of any nation the benefits of the S&T research must reach the people at all levels of society including those at the grass roots level. However, it was observed that most of the literature in science and technology, health, business, education and related fields was written by experts for experts and fellow colleagues in the field. This literature could not be effectively used by the non-experts or potential users in its original form. Due to the highly technical nature of the presentation of information, non-experts who would have benefited from it, did not accept and use it. In other words information was not presented in a language and form that was understandable, readable and acceptable to the potential users who may have benefited from it. Another problem in the effective utilisation of information even by the experts was, too much of information on a particular topic. Sheer amount of information scattered over wide range of sources in diverse forms, which discouraged its use by potential users. The difficulties encountered by potential users in getting the required information, resulted in non-use of information.

Therefore, it is required to develop products which would make information reach different categories of users in accessible and usable forms, so that it could be effectively used by them. This would involve information analysis, consolidation and repackaging of information for well defined users. In this Unit, you will study in detail the evolution of the concept of information analysis and consolidation, basic objectives, processes and products of information analysis and consolidation and values and benefits of such specialised services.

6.2 BARRIERS TO THE USE OF INFORMATION

The concept of information analysis, consolidation and repackaging was evolved in response to the difficulties encountered by the users in the effective use of information. The difficulties or barriers in the effective use of information by the users are basically due to the following inherent nature of information:

- Exponential growth of information has led to information explosion, however, users have inadequate time to read and assimilate all the information that is available on a particular subject.

- Interdisciplinary nature of information (such as biotechnology, biophysics, biochemistry, etc.) leads to scattering and seepage of information in different disciplines. Users who specialise in one discipline cannot effectively use the information published in other disciplines.

- Information is published in different languages (for example, Chemical Abstracts monitors the literature published in 50 languages). Users who are not familiar with other languages cannot use the information.

- Information is published in wide range of sources in print as well as in electronic form. The reliability and quality of information also varies in these sources and users do not have time to evaluate and select the right information.

- Information is presented in a wide range of media and formats. Users who are not familiar with that particular media or format cannot use the information. The media can be print, microform, audio/visual, electronic or personal communication. Format is arrangement and presentation of information in any of these media.

- Information is published in documents with restricted circulation (such as technical reports, dissertations, etc.). This leads to inaccessibility of that information.

- S&T information is highly technical in nature with trade and technical jargons. Users with no technical background cannot understand and use it in its original form.

The above mentioned barriers led to the need to find solutions to overcome them and develop new kind of information products.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1) What are the *barriers* to fruitful use of information?

....

....

....

....

....

6.3 EVOLUTION OF THE CONCEPT OF INFORMATION CONSOLIDATION

The analysis of the barriers to the use of information and the attempts to find solutions led to the concept of information analysis, consolidation and repackaging of information. Further, the idea of consolidated information comes from the discussions on information problems in developing countries. A number of United Nations Organisations have been actively seeking solutions to the information problems in developing countries. UNESCO is the most active institution engaged in these types of activities. The following three meetings sponsored by PGI, UNESCO were mainly concerned with the barriers to the use of information. Information analysis and consolidation was suggested as viable solution to this problem.

The below mentioned meetings paved the way for the evolution and development of the concept of information consolidation.

- First meeting of the UNISIST Working Group on Information Analysis Centres. Unesco, Paris, 1975.

- Symposium on Information Analysis and Consolidation (second meeting). Colombo, Sri Lanka, 12-15 Sept. 1978.

- Third meeting of the UNSIST Working Group on Information Analysis and Consolidation. Kuala Lumpur, Malaysia, 12-16 Sept. 1983.

The first meeting of the UNISIST Working Group was mainly centred on the need and importance of information analysis centres to support scientific research in developed countries. At the same time the Working Group recommended that due consideration should be given to the means for improving the existing situation in developing countries.

At the second meeting, the Working Group discussed in detail the term "information consolidation". Information consolidation was defined as the process of compression of relevant documents in order to provide definite user groups in developing countries with reliable and concise information in usable form. The Working Group felt that information consolidation activities might not be restricted to information analysis centres and can be performed by individuals as well as other institutions. The Working Group defined the term "**Information Consolidation**" as "the responsibilities exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge". The individuals and institutions or their components carrying out these functions were referred to as "**Information Consolidation Units (ICUs)**". The second meeting in its Final Report listed a number of recommendations for action in the field of information analysis and consolidation including an Action Plan for implementation by UNESCO during the period 1979-1982. Following were the recommendations made by the Working Group:

- Support should be provided for the establishment and operation of information consolidation units (ICUs) in areas most important to social and economic development;

- ICUs should be linked to national focal points to ensure coordination of activities at national level; and

- ICUs should preferably be located within major research and technological institutions and should respond to the identified needs of the country or region expressed through the user community.

Based on the recommendations of the Working Group, a Pilot Project on Information Consolidation was set up at Tata Energy Research Institute (Now The Energy and Resources Institute (TERI)) which produced following publications: *Wind Pump Handbook, Biogas Handbook and Cooking Stoves Handbook.* UNESCO also published a *Handbook on Evaluation, Restructuring and Repackaging of Scientific and Technical Information* by Tefko Saracevic and Judith B. Wood (PGI-81/WS/16) for providing guidelines for creation and operation of Information Consolidation Units.

In the third meeting a number of recommendations were made. One of the points discussed in depth was the linkages of information consolidation products to extension services in agriculture and health fields so as to ensure maximum application in the field. In order to have maximum impact, it was considered necessary that handbooks and manuals be done in close collaboration with respective extension services. The Working Group recommended that in promoting establishment of ICUs, focus should be on such areas which seem immediately useful to grass-roots development such as inland fisheries, off-farm employment, women's studies, appropriate technology, kitchen garden cropping, approaches to organising rural people for participating in opportunities for development, etc. Guidelines for the establishment of Information Consolidation Units were brought out during the third meeting. The Working Group also brought out an Action Plan for implementation by UNESCO during the period 1984-1987.

Among the information analysis and consolidation (IAC) products that have emerged as solutions to the effective and more beneficial use of information are scientific and technical reviews, state-of-the-art reports, handbooks, business, commerce and market reports, technical writings, popularisation of science writings, extension services in agriculture for farmers and in health services for the general public. Each product that is developed is for a well defined user group. S&T reviews are meant for the specialists, business, commerce and market reports are produced for the people in business and industry and extension services in agriculture are for farmers and health services for the general public. In the development of these specialised products the concept of a well defined user group is always kept in mind. In developing these products, analysis, synthesis, consolidation and repackaging of information is carried out keeping the target users in mind.

6.4 DEFINITION OF INFORMATION CONSOLIDATION

UNESCO Symposium on Information Analysis and Consolidation (held in Colombo, Sri Lanka) was concerned with definitions and distinctions particularly of the terms 'analysis' and 'information consolidation unit' in relation to their particular function. It was observed that "information consolidation activities" can be performed within institutions or systems other than information analysis centres, even by individuals or groups of individuals. It was, therefore, decided that the term '**Information Consolidation Activities**' should be used as follows to define information consolidation :

The term "**Information Consolidation Activities** is used to define the responsibility exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge. Individuals or groups of individuals performing information consolidation activities would each constitute an **Information Consolidation Unit** (ICU)."

A more comprehensive definition of consolidated information was formulated by Saracevic and Wood (1981):

"**Consolidated Information** is public knowledge specifically selected, analysed, evaluated, and possibly restructured and repackaged for the purpose of serving

some of the immediate decisions, problems, and information needs of a defined clientele or social group, who otherwise may not be able to effectively and efficiently access and use this knowledge as available in the great amounts of documents or in its original form. The criteria for selection, evaluation, restructuring and repackaging of this knowledge are derived from the potential clientele".

Following is a more concise definition given by Saracevic and Wood (1981):

"**Consolidated information** is a text(s) or message(s) purposefully structured from existing public knowledge to affect the private knowledge and decisions of individuals who otherwise may not be able to effectively and efficiently access or use this public knowledge from the original amounts or in the original structure and form".

In other words, consolidated information is concerned with providing right information to the specific user(s) in the right form and at the right time. The relation between the user and consolidated information is illustrated by Saracevic and Wood in the below given diagram (6.1).
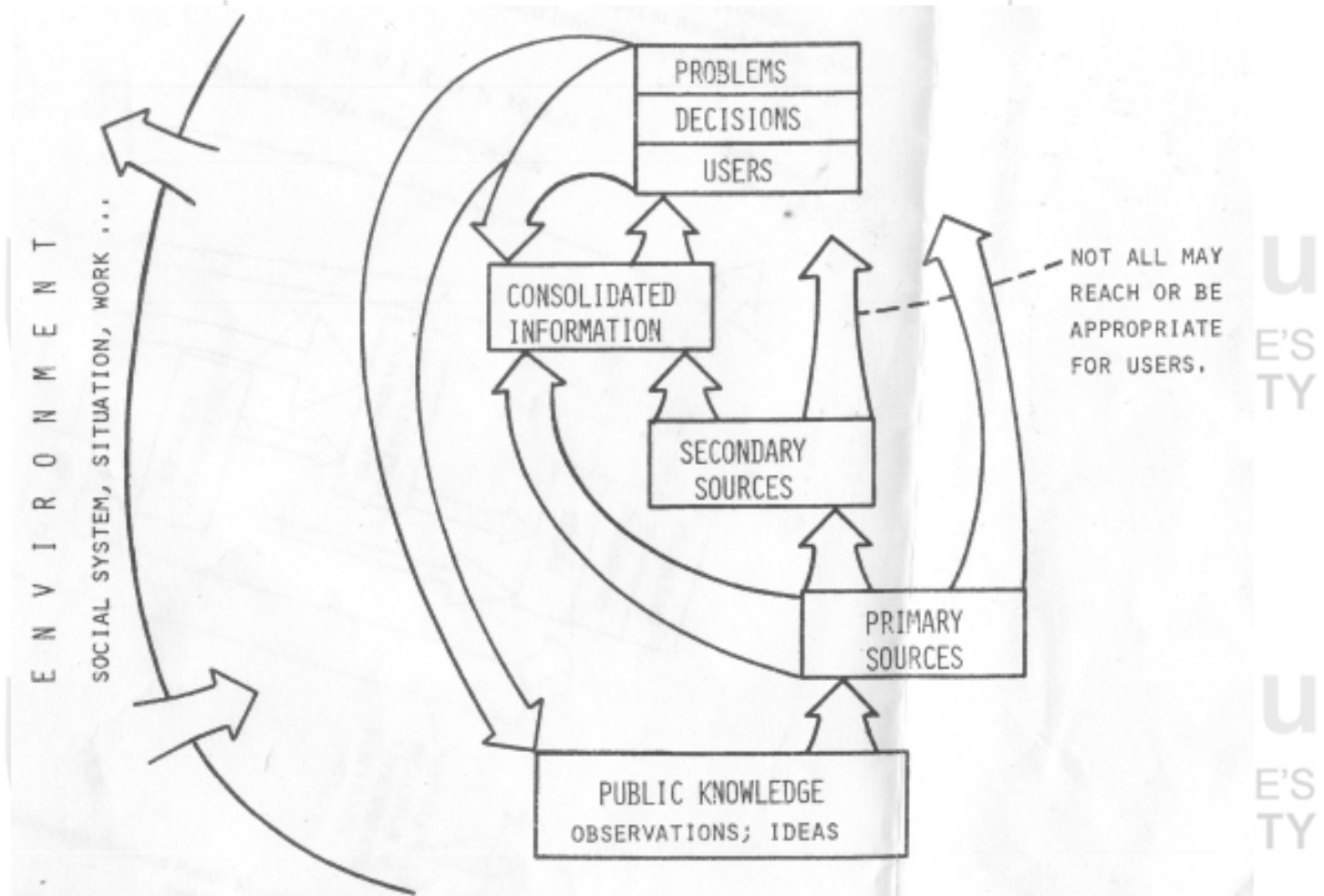
Diagram 6.1:Relation between Public Knowledge, Consolidated Information and Users

(**Source:** Saracevic and Wood, Page 17)

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

2) Explain the meaning of the expression "information consolidation."

....

....

....

....

....

....

6.5 PROCESSES IN INFORMATION CONSOLIDATION

The basic processes associated with information analysis and consolidation activities are listed below:

1) Study of potential users to find their information needs and decide on the information product(s) to fulfil those needs;

2) Selection of information source(s) containing the most useful information for given user problems and information needs. The selection can be done using a variety of primary and secondary sources;

3) Evaluation of information contained in these sources for its merit, validity, and reliability;

4) Analysis of information to identify and extract the most salient features conveyed by the given source;

5) Restructuring (if necessary) of the analysed and extracted information as a new product, which differs from original presentation and can be understood and used more effectively by the target user. This process may involve synthesis, condensation, rewriting, simplifying, reviews, state-of-the-art presentation, etc.

6) Packaging and/or repackaging of restructured information in a form that will increase its use. (Restructuring deals with the contents or substance of information while packaging deals with the form of its presentation)

7) Diffusion or dissemination of information in ways that will encourage and promote its use. This may also involve educating users in the use of information and marketing of information;

8) Feedback from the users and improvement of the product based on the feedback.

The processes, elements and the relations involved in information consolidation activity are depicted by Saracevic and Wood (1981) in the following diagram (6.2).

ENVIRONMENT

USER STUDY
CRITERIA

PROBLEMS
DECISIONS
USERS

INFORMATION SOURCES

SECONDARY

PRIMARY

EVALUATION

SELECTION

ANALYSIS
SYNTHESIS
EVALUATION

DISSEMINATION

RESTRUCTURING

PACKAGING
REPACKAGING
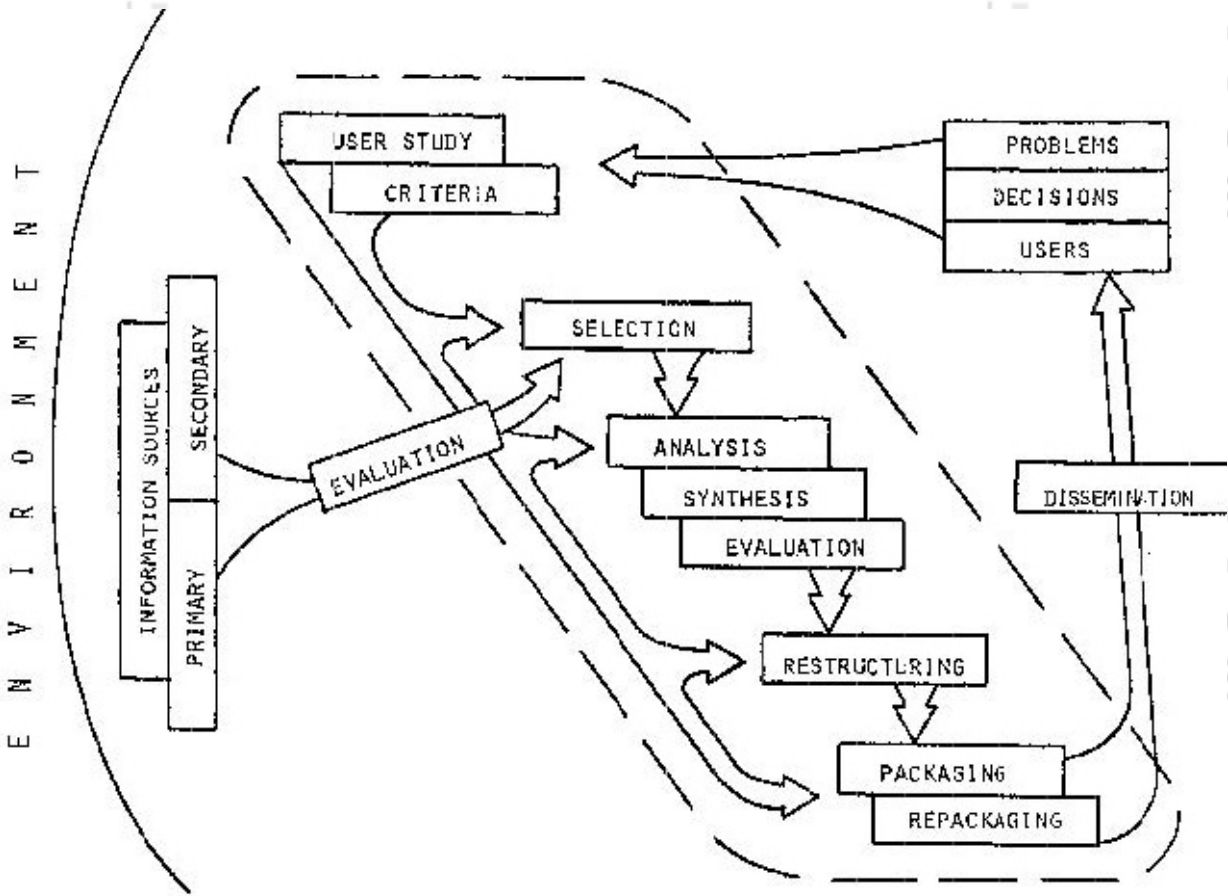
Diagram 6.2: Processes in Information Consolidation
(**Source:** Saracevic and Wood, Page 31.)

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

3) Discuss the important processes involved in information consolidation.

....

....

....

....

....

....

....

....

Now, let us study each of the above listed processes in detail.

6.5.1 Study of Users for Information Consolidation

As it is evident from the definition of information consolidation, a user is the most important element in information consolidation activities. Perfect understanding of users and their needs is a must for any successful information analysis and consolidation (IAC) product.

User groups can be categorised as follows:

1) Scientists, engineers and professionals engaged in R&D activities;

2) Managers and business people engaged in small and large businesses, commerce, marketing, etc.;

3) Policy and decision makers in government;

4) Technicians, supervisors and paraprofessionals working in government departments, industries and other business concerns;

5) Communicators such as extension workers, teachers and local leaders, communicating new technology or practices to the general public; and

6) Agricultural and industrial workers from rural and urban areas.

Education level of each group varies from highly educated to semi-literate to illiterate. It has been observed that information requirements of the first four groups have been systematically studied by the information workers in the field and there are wide range of information services and products available for these four groups. However, the last two groups have not been served by the majority of information services and products in both developed and developing countries.

Information requirements of these last two groups need special attention from information analysis and consolidation experts, if benefits of S&T knowledge are to reach them. Information needs of these two groups should be studied keeping in view their education levels. While studying their information needs, linkages should be established with extension service staff. This would provide better insight into their information requirements and the type of IAC product that will fulfil their needs. Let us take an example of a new technology, which has been developed by a research institution and the details of which are to be communicated to the common man or people at the grass roots level. The information product conveying this information should be simple, with less technical details and presented in a style and format which these people can understand and utilise without any difficulty. For example, for illiterate people a film can be made in their language describing the new technology, its applications and benefits. For farmers, extension workers can be trained on the use of new technology, who in turn can demonstrate the technology to the farmers practically in the fields.

6.5.2 Selection of Relevant Information Sources

Once information needs and type of IAC product have been identified, the relevant information sources should be selected. Information sources may range from documentary sources to non-documentary sources. Documentary sources comprise primary, secondary and tertiary sources, while non-documentary sources consist of institutions as well as human beings. Among documentary sources peer reviewed periodicals, publications of reputed publishers and publications

of prestigious R&D institutions in the subject field should be selected for consolidation purposes. Specialists in the subject field should be identified for consultation purposes. Such specialists help in providing information which is not yet published in formal sources. The persons involved in selection process should be information specialists/librarians as well as subject experts in the field.

6.5.3 Evaluation of Information

The next step is examining the merit, validity and reliability of information contained in information sources selected for consolidation. The merit of the selected source can be judged by examining if a particular source is covered by the review publications on that topic, the number of citations the source has received and the source has undergone peer review process prior to its publication. All these parameters point towards the reliability of the selected source.

Data provided in the selected sources should also be examined for its validity and reliability. Apart from experts' opinion and general consensus, there are set procedures for evaluation of the data. Some of them are: i) testing of data (critical evaluation of the data); ii) comparison of data on the same aspect from different sources. These procedures, however, are time consuming and costly. Some information centres have come up which are testing the validity and reliability of S&T data. One such centre is the Centre for Numerical Data Analysis and Synthesis, Purdue University, USA.

6.5.4 Analysis and Synthesis of Information

In analysis of information, the contents of selected source(s) are studied to identify the most relevant information conveyed by the source(s). Then the relevant information is extracted, assessed and verified. After this the extracted information is organised and sorted into headings and sub-headings according to some pre decided scheme such as the table-of- contents, classification scheme or typology for the subject or mission.

This is followed by synthesis of information. In this process extracted information from many sources is merged and arranged. Then data from different sources are also compared and if there is any conflicting information, it is resolved through consensus. During synthesis the analysed information from one or more sources is condensed and presented in a new arrangement or structure with an interpretive or evaluative point of view. Condensation is derivation of short summary of information from a source or extraction of key statements from the source such as sentences, paragraphs, figures, etc.

6.5.5 Restructuring and Types of Products

After analysis and synthesis of information, decision is taken on the type of product or service to be offered to the target users. Results of user studies should be taken into account while determining the type of IAC product. In restructuring the evaluated and synthesised information is simplified, compressed or presented in a new form which differs from the original. Restructuring of information is also carried out to meet the comprehension levels of those target users who have no technical background. During restructuring care is taken to see that the product fits the comprehension level of the target user and also reliably presents the state-of-the-art knowledge on the given subject. During restructuring, information

is presented in language and form that is understandable, readable and acceptable to the target users.

There are a large number of IAC products. Some of them are listed below:

Reviews: critical reviews, state-of-the-art reports;

Reports: assessment, market and technical reports;

Data: data compilation and tables, critical data;

Databases: experts databases, subject knowledge databases;

Technical Writings: guides, manuals, instruction sheets, popular articles about a scientific and technical topic, explanation of a complex subject, written in style and language which can be understood by target users with no technical background;

Handbooks: compilation of essential data and information on a subject;

Briefings: on demand evaluative studies and compilations;

Critical Studies: comparisons of different practices and polices with merits and demerits;

Brochures, **Posters**, **Newsletters**, **News Stories**, **Translations** also come under IAC products.

Each of the above listed products have their own specific requirements, criteria and procedures for preparation. Many of these products require completely new form of presentation to make the product compatible with users' needs and comprehension levels.

6.5.6 Packaging and/or Repackaging of Information

While restructuring deals with the contents of IAC product, packaging deals with the media and format in which information is to be presented. The media can be print, microform, audio/visual, electronic, as well as oral. Format is the arrangement and presentation of information in any of these media.

The methods of packaging of information were always influenced by the technology of the day. Printing technologies were used in earlier periods for the purpose. Later on, many technologies came to challenge print e.g. film, audio, video, cassettes and now computer and other electronic technologies have left their lasting imprint on information packaging. A number of media are now available and new areas are constantly developed presenting wide range of choices. The important media for information packaging can be categorised into:

- Print media,
- Audio-visual media,
- Electronic media, and
- Interpersonal contacts (as a medium).

The selection of media in information consolidation should be user-oriented. In user-oriented packaging it is helpful to think first about users, their background and requirements and then about appropriate media and formats.

Likewise, a number of formats are available to be used for arrangement and presentation of consolidated information in any of the media. Format for the

IAC product should be such that it not only enhances the use of the IAC product but also should contributes towards comprehension, assimilation and recall of its contents by the user. For this, different media and formats are adopted for different groups of users. For instance, if similar type of IAC product carrying the same message (such as creating awareness of a new technology useful for all levels of users or a breakthrough in cure of some chronic disease) is to be prepared for different groups of users, the level of treatment of the subject, technical details covered, media and format will be different for each group, though the message to be conveyed will be the same. For instance, oral communication is preferred by rural people, children react positively if a message is conveyed through a story line and for illiterate people a message can be conveyed more effectively through audio/visual media or through personal communication.

While packaging of information is physical recording, arrangement and presentation of information in a given medium and in a given format. The repackaging of information is rearrangement of physical media/ or forms to present the same information for another group of users so that it is appropriate and helpful to that target group. The rationale behind the term repackaging is making information available to illiterates and other groups for whom the usual formats used for conveying the information would pose a barrier to access.

For example in India, the Indian Council of Agricultural Research, engaged in research in the field of agricultural sciences, has brought out 44 documentary films for the farmers on the farmer friendly technologies developed by the Council. Films are on topics such as sheep rearing, honey production, shrimp culture, fodder production, hygienic milk production and milk processing and packaging, etc.

Repackaging is not a new idea, but changes in technology have enhanced the process, creating the potential for better service. Saracevic and Wood (1981) and Bunch (1984) were the first to use the term in their publications in describing how an information service selects appropriate material, reprocesses and packages the information, and arranges the material in a way that it is appropriate and helpful to the user. These studies mostly focused on scientific and technical information and community information.

6.5.7 Dissemination and Communication

After an IAC product is developed, the next step is its active and effective dissemination to the target users and its effective utilisation by them. Dissemination relates to transmission of information to users. It requires determination of the channels by which information products will be delivered to the users. Communication is closely related to dissemination, but it is a broader concept. Communication is a process by which information is transferred through a given channel (or channels) from a source or a sender to a destination or recipient. The process can be in both directions involving feedback from the recipient. Some of the important channels for dissemination of information consolidation products include:

- Interpersonal delivery: The product is delivered personally to the users.

- Group personal delivery: The product is delivered to a whole group of users in a meeting or through demonstration.

- Strategic placement: The product is placed in locations frequented by users to pick on their own.

- In-house dissemination: The product is circulated within the organisation.

- Local depositories: The product is disseminated through local information centres and libraries.

- Mass media: The product is delivered or announced through mass media such as newspapers and magazines as well as through broadcasting i.e. radio or television.

- Mail: The product is delivered through direct and mass mailing.

- Computer networks: The product is delivered through computers via telecommunication networks; online databases; electronic mail or computer conferencing.

6.5.8 Marketing of Consolidated Information Products

The work of an Information Consolidation Unit is not complete with the making of a product or provision of a service. Active and effective dissemination is needed to make the product reach the hands of the users. Otherwise, the product or service will remain unused. Conscious and deliberate efforts should be made to market the product and make users aware of its services and benefits.

In the information profession there is often an opposition to active marketing on the ground that it introduces an element of commercialisation in information work. The argument is that the commercial aspects have distorting effect on information products and services which should be appreciated on their own intrinsic merit. This philosophy may be good in cases where information services and products are fully subsidised on a continuous basis and where cost-effectiveness is not called for. This attitude needs to be changed in the case of non-subsidised IAC products.

Marketing involves market research and analysis, segmentation of users into groups with similar characteristics, values, needs and information benefits, development and targeting of information consolidation products to the given user segments, user education and evaluation.

6.5.9 Feedback

Regular feedback from the users of the IAC product and constant improvement of the product based on the feedback forms an essential part of information analysis and consolidation process.

Self Check Exercise

Note: i) Write your answers in the space given below.

   ii) Check your answers with the answers given at the end of this Unit.

4) What do you understand by the terms packaging and repackaging of consolidated information?

   ....

   ....

   ....

5) Explain the need for dissemination and marketing of consolidation information services and products.

....

....

....

....

....

6.6 VALUE AND BENEFITS OF CONSOLIDATED INFORMATION

The complexity of and the need for resources are the factors that discourage initiation of information consolidation activities either by groups of individuals or by organisations. What values and benefits should be stressed upon? This question is not considered often even though the answers are crucial for justification of information consolidation activities to fund providers and for communication and promotion to users.

On a general level, information consolidation is justified for its contribution to the processes of social and economic development. On a specific level it helps in problem solving and decision making. Let us try to understand these aspects. For instance, the process of development in an increasingly interdependent world requires an increase in sophistication and use of scientific, technical, commercial and related information. The value of such information does not lie in its existence but in its acceptance and use. The chances for acceptance and use of information are increased by it being more appropriate. In fact, consolidated information aims at being more appropriate to the users, their needs and levels, the capacities and time allotments given to information absorption and similar user-related factors.

More specifically, the value of consolidated information can be stressed upon in relation to its role in decision making and problem solving. It may be stated that information is required for making decisions and solving problems, even those encountered in simple day-to-day work. It must be noted that as complexity of decisions or problems increases, the necessity for information intensifies. Also, as the amount of available information proliferates, it becomes difficult to get and use relevant information. It is also true that as complexity and technical sophistication of available information increases, less of it can be used by decision makers and problem solvers as presented in its original form.

The above discussion points to the need for consolidated information. It must be noted that the value of consolidated information changes with the type and amount of information. For example, a pile of documents on a given topic on a decision maker's table or a list of relevant documents in a worker's hand have little value in relation to the decisions they have to make on that topic or problems they have to solve, even though the documents may contain all the information that is needed, on the other hand, summaries may have a bit more value. Integration of excerpts from a number of documents may have still more value. Obviously, evaluated information further increases the value while studies addressing the topic such as reviews, state-of-the-art reports, market studies, statistical summaries and correlations, etc. further enhance the value considerably. The highest value

of information is in a set of alternative choices summarised from all the other sources mentioned and recommendations for decisions or resolution of problems. Saracevic and Wood (1981) have depicted these relations in the diagram (6.3) given below.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

6) Briefly explain the value and benefits of consolidated information.

....

....

....

....

....
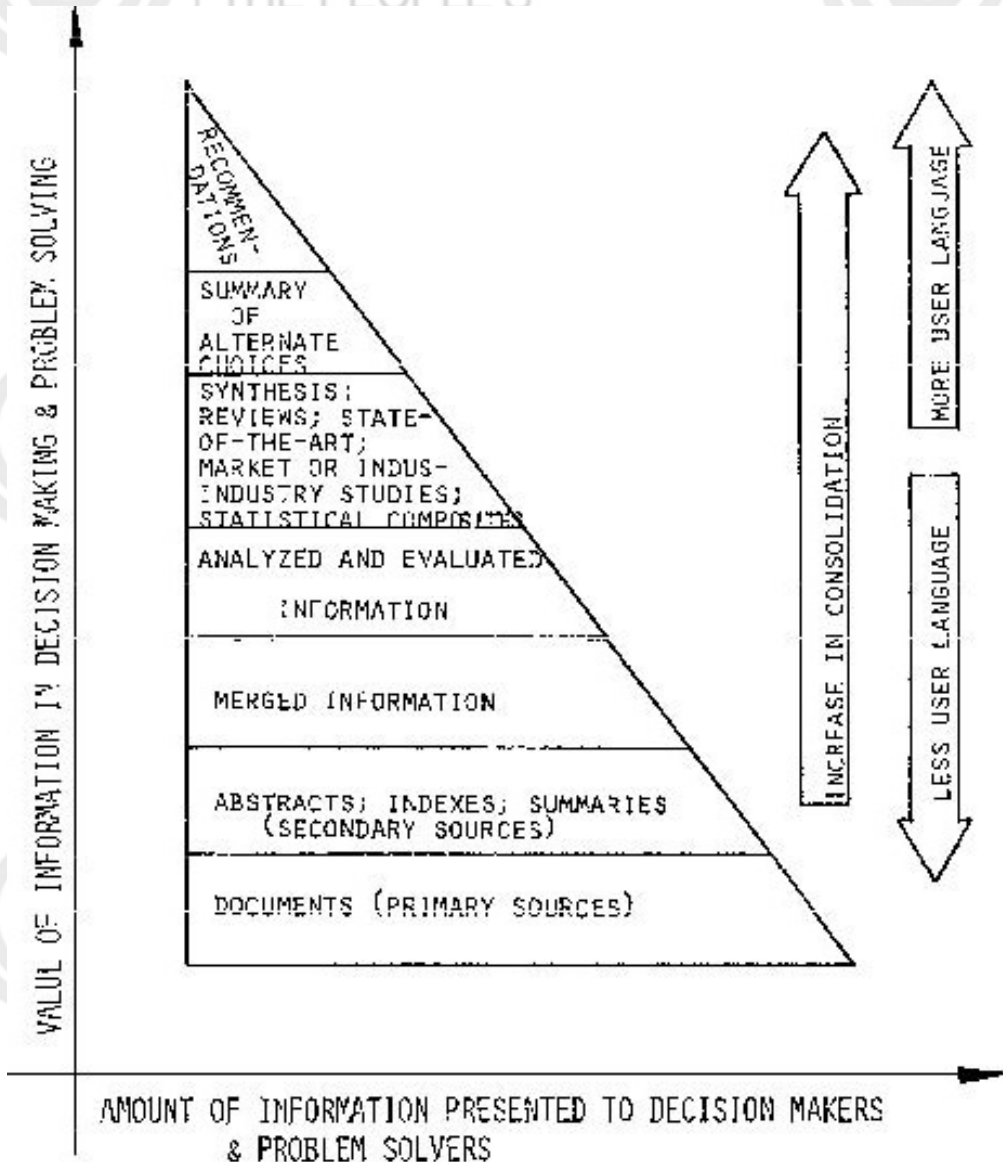
Diagram 6.3: Value of Information in Decision Making and Problem Solving
(**Source:** Saracevic and Wood, Page 51.)

In other words, from the foregoing discussion the following inferences can be drawn.

- As the amount of information presented to a decision maker is increasingly consolidated, its value increases;

- As the information is increasingly expressed in the everyday language and the social / cultural framework of the user, its value increases for that user;

- As the information is increasingly packaged in a way that will make its use easier, its value increases.

The values relating to consolidated information are recognised as well as clearly understood by information workers. The same cannot be said about users and potential users. It is observed that users with high levels of education and responsibility are not aware of the benefits of consolidated information for them or for their organisations. Information workers need to take special interest in explaining to users and potential users the values and benefits of consolidated information. This may be done in many ways such as user education. Otherwise, good products and services may remain unused. It would be a better idea to present in a tabular form a list of benefits which could be derived from usage of consolidated information. Such efforts may help Information Consolidation Units (ICUs) in promotion of their products and services.

Table 6.1: Potential benefits that may be derived from use of consolidated information

General Activity or Area	Potential Benefits
Decisions	Better informed about alternatives and consequences. Improved decision making process. Reduction of uncertainty.
Knowledge, Competence	Increase in level, depth, breadth by individuals or groups. Higher sophistication in drawing relations between seemingly unconnected facts.
Adaptation	More appropriate and adjusted responses by individuals, groups or organisations to demands of and changes in the environment and a complex world.
Productivity	Higher levels and outputs in work and other activities. More contacts. Increased capacity and effectiveness.
Resources	More efficient and economic use of resources. Increased capacity and /or effectiveness. Better economy.
Success	Contribution towards attaining aims of individuals, groups and organisations. Better or wider spread and acceptance of results. Direction of necessary adjustments.

Specific Areas	Benefits
Enterprises, Business, Commerce	Broadening markets. Providing appropriate responses to market conditions and demands. Meeting competition. Complying with standards and regulations. Motivating personnel. Making business decisions.
Industry, Manufacture	Incorporating technical innovation. Adding new products. Making products appropriate. Increasing productivity. Reducing break downs.
Science	Keeping up with research front. Judging own position and advances. Making appropriate decisions on policy and allocations. Searching for related works and/or ideas for further work or methodology.
Education	Keeping up with advances in given fields and in education research, methods, and approaches. Providing for educational planning and assessments or comparisons.
Individuals	Providing for self fulfilment and advancement in their given area of work or interest. Providing for wider opportunities in employment, self help and adjustments to changing environments and conditions. Increasing sophistication towards higher quality of life.

6.7 SOME EXAMPLES OF IAC PRODUCTS FROM INDIA

In India many R&D institutions are bringing out IAC products in their area of research for different levels of users. Let us study these institutions and their products.

The Energy and Resources Institute commonly known as **TERI** (formerly Tata Energy Research Institute) is engaged in research activities in the field of energy, environment and sustainable development.

TERI brings out research periodicals, research newsletters, many reference titles, popular periodicals, general interest books as well as audio/visual material in the form of films, CDs in the areas of energy, environment and sustainable development.

Some of the IAC products of TERI are listed below:

TERI Information Digest on Energy and Environment: The digests are for policy makers, scientists and technologists to keep them abreast of latest developments in energy, environment and sustainable development.

TERI Policy Briefs: Briefs are brought out on specific areas for members of parliament, policy makers, regulators, area experts, civil society and media.

Popular periodicals: *Terra Green* (monthly) and *The Solar Quarterly* (quarterly) on renewable energy.

Terravision Series: Under this series TERI brings out documentary videos/CDs on various energy, environment and sustainable issues. The CD on *"ABC of Water Pumping Efficiency"* highlights the basics of many pumping systems, methodologies of energy audits and opportunities for energy saving. "TERI Uttam Urja"- a documentary film highlights the benefits of the spread of renewable energy technology. It describes energy efficient biomass based tools for small enterprises and smoke free cook stoves that reduce the consumption of fuel wood. The film on *"Global Warming"*- focuses on the challenges and threats of climate change and creates an awareness for immediate action. *"Learning to Dream Again"*- this film traces the relationship communities have with their forests, the way to protect and nurture them. *"Water Ignites Life and Hope"*- is a documentary film of two imaginary stories of community efforts of managing water judiciously.

Terrapin Series: To spread awareness among children on environmental issues TERI brings out large number of books under this series for children to educate as well as entertain them. The books are available at three levels: Key Stage 1: 5-7 Years; Key Stage 2: 7-11 Years and Key Stage 3: 11-15 Years.

GREEN Olympiads and TERRA QUIZ: These are the series of knowledge books for children in 5 volumes.

Soldiers of the Earth: It is a global environment awareness programme for children. It is a joint initiative of TERI and ONGC (Oil and Natural Gas Corporation) to involve children in conservation activities. The tools used are books, workshops and learning modules. The aim is to educate children and make them conscientious and responsible individuals when they grow up.

CAMPS (Community Adoption Monitoring Programme in Schools): CAMPS is a unique programme that involves students and local communities in its national endeavour for a cleaner and greener environment.(http://www.teriin.org/**)**

National Institute of Science Communication and Information Resources (NISCAIR): NISCAIR came into existence on 30 September 2002 with the merger of National Institute of Science Communication (NISCOM) and Indian National Scientific Documentation Centre (INSDOC), two premier institutes of Council of Scientific and Industrial Research (CSIR) devoted to dissemination and documentation of S&T information. NISCAIR collects/stores and publishes S&T information and develops information services and products in the fields of S&T.

NISCAIR communicates scientific knowledge through various publications such as primary research periodicals, abstracting periodicals (*Indian Science Abstracts and Medicinal* and *Aromatic Plant Abstracts*) and newsletters (*CSIR News* in English and *CSIR Samachar* in Hindi). At the same time to reap the benefits of scientific research, scientific knowledge is communicated to the masses through different publications. Some of them are listed below:

Wealth of India: A- Raw Material Series (11 Volumes, and 1 Supplement), **B-Industrial Products Series** (9 volumes). Wealth of India is in a true sense information analysis and consolidation product. It is an encyclopaedia on India's raw material resources covering plants, animals and minerals. One can freely download the Wealth of India Brochure from the NISCAIR website. The brochure also contains an EXTENSION BULLETIN on "Killer Plants for Dengue Fever Mosquito".

Popularisation of science is a major programme of NISCAIR. Under this programme NISCAIR brings out various publications such as popular science periodicals, popular science books, etc.

Popular Periodicals:

- Science Reporter (monthly in English)
- Vigyan Pragati (monthly in Hindi)
- Science-ki-Duniya (quarterly in Urdu)

Popular Science Books:

NISCAIR has published 60 popular science books under different series in English. About 28 of these books have been brought out in Hindi as well. Following are the book series under which it has published these books:

- CSIR Golden Jubilee Series (25 books)
- Science-Fun-Series (7 books)
- Q-Series (3 books)
- Vistas of Biotechnology Series (6 books)
- Foundation of Biotechnology Series (6 books)
- AIDS
- Science and Society in 21st Century
- IT for All (7 books). These 7 books cover topics like Microsoft for Beginners, C++ for Beginners, Build your Web Home, etc. Apart from English all 7 books are available in Hindi, Punjabi, Urdu, Kannada, Marathi, Gujarati, Tamil, Bengali and Malayalam.

    (http://www.niscair.res.in/)

Indian Council of Agricultural Research (ICAR): ICAR is the apex body for co-ordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country. Agricultural Extension Division of ICAR has a mandate to take the technology developed at various agricultural research centres to the people at the grass roots level such as farmers. For this it provides:

- Vocational training to the farmers,
- Training to extension personnel to update their knowledge and skill,
- Single window delivery system of technology, products, services and information through Agricultural Technology Information Centres, and

- Through Institute-village-linkage-programme (IVLP) it assesses the newly developed technology and carries out necessary refinement to make the technology location specific under various farming systems.

With 97 ICAR institutes and 47 agricultural universities spread across the country, ICAR is one of the largest Agricultural Systems in the world.

Publications: ICAR publishes 7 research journals, 2 abstracting journals (*Indian Agricultural Science Abstracts* and *Indian Animal Science Abstracts*) and 2 newsletters (*ICAR News* and *ICAR Reporter*).

Popular Periodical: *Indian Farming* is a popular magazine for people interested in farming. The aim is to present scientific information in a popular style to the progressive farmers and people interested in application of science in day-to-day problems in farming.

Books: ICAR has published over 95 books in English on various aspects of agriculture such as crop sciences, horticulture, animal sciences and fisheries. The Council has also published 63 books in Hindi on various aspects of agriculture.

E-Books: ICAR e-books are available free on its website.

Agricultural Films: ICAR has brought out 44 documentaries on farmer friendly technologies for the benefits of the farmers. (http://www.icar.org.in/)

6.8 SUMMARY

This Unit explains the concepts, problems and requirements of specific practices referred to as information consolidation. The main objective of information consolidation is to increase the effectiveness of information usage and to widen the circle of users served.

Information consolidation is an effective approach to the fulfilment of specific informational needs for evaluative and synthesised information services for the existing and potential users. It should be noted that information consolidation is on one hand useful to sophisticated users like engineers, scientists, managers, policy makers and on the other hand also useful to users of lesser sophistication such as workers, villagers, etc.

It should be emphasised that information consolidation provides great scope and opportunity for the effective use of non-print dissemination channels and packaging media especially in relation to information for a broad group of users in both the urban and rural areas. Information consolidation involves complex processes. It may also be emphasised that while information consolidation involves complexity in processes, it also offers simplicity and appropriateness in products. The potential benefits derived in using consolidated information are very high. It is possibly the most effective tool for transferring appropriate technology to developing countries and also most effective means for ensuring use of information.

6.9   ANSWERS TO SELF CHECK EXERCISES

1) The concept of information consolidation evolved in response to the difficulties posed by a number of factors in the optimum use of information, specially scientific and technical information. Following are the barriers to fruitful use of information:

   - Exponential growth of information has led to information explosion. At the same time, users do not have enough time to read and assimilate all the information that is available.

   - Interdisciplinary nature of information (such as biotechnology, biophysics, biochemistry, etc.) leads to scattering and seepage of information in different disciplines. Users who specialise in one discipline cannot use the information published in other disciplines.

   - Information is published in different languages (for example, Chemical Abstracts monitors the literature published in 50 languages). Users who are not familiar with other languages cannot use the information.

   - Information is published in wide range of sources in print as well in electronic form. The reliability and quality of information also varies in these sources and users do not have time to evaluate and select the right information.

   - Information is presented in a wide range of media and formats. Users who are not familiar with that particular media or format cannot use the information. The media can be print, microform, audio/visual, electronic as well as oral. Format is the arrangement and presentation of information in any of these media.

   - Information is published in documents with restricted circulation (such as technical reports, dissertations). This leads to inaccessibility of that information.

   - S&T information is highly technical in nature with trade and technical jargons. Users with no technical background cannot understand and use it in its original form.

2) The idea of consolidated information comes from discussions of information problems in developing countries. Many of these problems relate to lack of information infrastructure and low propensity of users to use information. It was also recognised that mere possession of information – having it available and accessible – is not a guarantee of its use. The barriers for use must be removed. Information consolidation has been suggested as a solution to the problem of barriers to use of information.

   At the second meeting of UNESCO Working Group the term "Information Consolidation" was defined as the process of compression of relevant documents in order to provide definite user groups in developing countries with reliable and concise information in usable form. The Working Group felt that information consolidation activities might not be restricted only to information analysis centres; these can be performed by individuals and other institutions as well. The Working Group defined the term "**Information**

Consolidation" as "the responsibilities exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge". The individuals and institutions or their components carrying out these functions were referred as "**Information Consolidation Units (ICUs)**".

A more elaborate explanation may be offered in these terms: "Consolidated information is public knowledge specifically selected, analysed, evaluated, and possibly restructured and repackaged for the purpose of serving some of the immediate decisions, problems and information needs of a defined clientele or social group, who otherwise may not be able to effectively and efficiently access and use this knowledge as available in the great amounts of documents or in its original form. The criteria for selection, evaluation, restructuring and repackaging of this knowledge are derived from the potential clientele".

In other words, the basic purpose of information consolidation can be summarised as under:

- To increase the effectiveness of information transfer;

- To encourage more intensive use in a wide range of developmental activities; and

- To increase the circle of potential users particularly by fulfilling specific information needs for evaluated and synthesised information.

3) The important processes in most information consolidation activities are: selection, acquisition, evaluation, analysis and synthesis of information. These processes are performed with a view to the provision of a product or service and their dissemination and marketing. It must, however, be stated that study of potential users is a pre-requisite for all the other processes. It may be noted that the definitions provided for the concept information consolidation mentions prominently definite user groups to which information is provided. The crux of the problem is not how effective or efficient the processes involved in information consolidation are but what an information consolidation service can do to assist an information user in identifying, clarifying or solving a problem and what such a service can do to raise the probability that a user will find useful information with minimum effort.

These two questions form a framework on which to build information consolidation services. The other processes are summarised below:

a) Study of potential users to find their information needs and decide on the information product(s) to fulfil those needs;

b) Selection of information source(s) containing the most useful information for given user problems and information needs. The selection can be done using a variety of primary and secondary sources;

c) Evaluation of information contained in these sources for its merit, validity and reliability;

d) Analysis of information to identify and extract the most salient features conveyed by the given source;

e) Restructuring (if necessary) of the analysed and extracted information as a new product, which differs from original presentation and can be understood and used more effectively by the target user. This process may involve synthesis, condensation, rewriting, simplifying, reviews, state-of-the-art presentation, etc.;

f) Packaging and/or repackaging of restructured information in a form that will increase its use (Restructuring deals with the contents or substance of information while packaging deals with the form of its presentation);

g) Diffusion or dissemination of information in ways that will encourage and promote its use. This may also involve educating users in the use of information and marketing of information; and

h) Feedback from the users and improvement of the product based on the feedback.

4) Packaging deals with media and format in which consolidated information is to be presented. The media can be print, microform, audio/visual, electronic, as well as oral. Format is the arrangement and presentation of information in any of these media.

Format for IAC product should be such that it not only enhances the use of IAC product but also should contribute towards comprehension, assimilation and recall of its contents by the user. For this different media and formats are adopted for different groups of users. For instance, if similar type of IAC product carrying the same message (such as creating awareness of a new technology useful for all levels of users or a breakthrough in the cure of some chronic disease) is to be prepared for different groups of users, the level of treatment of the subject, technical details covered, media and format will be different for each group, though the message to be conveyed will be same. For instance, oral communication is preferred by rural people, children react positively if a message is conveyed through a story line, and for illiterate people a message can be conveyed more effectively through audio/visual media or through personal communication.

While packaging of information is physical recording, arrangement and presentation of information in a given medium and in a given format, the repackaging of information is rearrangement of physical media/ or forms to present the same information for another group of users so that it is appropriate and helpful to that target group. The rationale behind the term 'repackaging' is making information available to illiterates and other groups for whom the usual formats used for conveying the information would pose a barrier to its access.

5) The work of an information consolidation unit is not considered complete with the making of a product or provision of a service. Active and effective dissemination; that is, a choice of dissemination channel (channels) appropriate to a given group of users with an eye towards effective communication and fruitful use must be included as an integral part of the whole unit. Otherwise,

the products and services will remain unused. The tragedy is that, often, the dissemination aspect does not receive adequate attention.

It is, therefore, worthwhile to consider information marketing as a concept that may be of help in effective communication of information consolidation products and services. It may be noted that there is often a philosophical opposition to active dissemination and especially marketing on the ground that they introduce an element of commercialisation in information work. The argument is that commercial aspects have a distorting effect on information products and services, which should be appreciated on their intrinsic merit. This philosophy may be applicable to consolidation of information services and products which are totally subsidised and without necessity for any accounting regarding costs, cost-effectiveness and cost and user benefits. But for non/subsidised services this policy does not hold good.

Marketing is not to be equated with pushiness and high pressure selling of products and services. In fact, marketing is the reverse of the selling concept. Even products and services which are not priced require marketing. In other words, an information consolidated unit without active dissemination and marketing integrated with products and services offered might inevitably fail.

6) Information consolidations activities are not only associated with complex processes, but also involve cost factors. In other words, these activities require financial resources and committed specialised manpower to accomplish the task. Hence, any such activity needs sufficient justification before it is organised.

On a general level, information consolidation is justified for its contribution of the processes of social and economic development. On a specific level its benefits can be justified as a contribution to problem solving and decision making.

The process of development in an interdependent world involves and requires use of scientific, technical, commercial and related information. Unfortunately, the value of such information does not lie in its existence or accessibility but in its acceptance and use. The chances of information use are increased only when that information is appropriate. The main purpose of consolidated information is to make it suitable and appropriate to the users, according to their needs and levels and capacities to the information absorption and similar other user-related aspects. Besides, this consolidated information may contribute to information sophistication of a population, which in turn contributes to quality of life. For example, the value of consolidated information that helps to improve sanitation surely leads to decrease in diseases and thus, helps the prevention of diseases.

The value of consolidated information has a great role in decision making and problem solving. In other words, making decisions and solving problems, even those faced in day-to-day work requires information. In fact, as complexity of decisions and problems increases the need for information intensifies. Also, it becomes difficult to get relevant information as information proliferates and distributes itself in many sources. The

interdisciplinary and sophisticated nature of information presents problems to users and they are not in a position to use it in its original form and format. To obviate users from these difficulties and provide solutions to their informational problems consolidation of information is necessary. Evaluated, summarised and repackaged information is more valuable to decision makers and problem solvers. Very often values and benefits of consolidation information are not obvious to the clientele. They must be made aware of these benefits by user education and other efforts.

6.10 KEYWORDS

Analysis of Information : It is a process of determining and isolating the most salient information conveyed by a given information source and separating this information into its constituent elements on the basis of predetermined evaluative and other criteria.

Consolidated Information: Public knowledge specifically selected analysed, evaluated and possibly restructured and repackaged for the purpose of serving some of the immediate decisions, problems and information needs of a defined clientele or social group, who otherwise may not be able to effectively access and use this knowledge available in great amounts of documents or in its original form.

Information Consolidation Activities : These are used to define the responsibilities exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge. Individuals or groups of individuals performing information consolidation activities would each constitute an Information Consolidation Unit (ICU).

Information Consolidation: Involves selection, evaluation, analysis, synthesis, possibly, restructuring and repackaging of information as well as dissemination and marketing of resulting products and services.

Package Formats : The arrangement, shape and layout of information on a given product in a given medium.

Package Media : The physical substance on which information is recorded, displayed or presented.

Packaging of Information: It is a physical recording arrangement and presentation of information in a given medium and in a given form.

Repackaging of Information: It is rearrangement of physical media and/or forms in which information has been presented (or a presentation in a given medium and form of restructured information) which is tailored to the requirements of a specific clientele. The aim of repackaging is to enhance the acceptance and use of information products and the assimilation and recall of their contents.

Synthesis : It is a process of condensation and distillation of analysed information from one or more sources and presentation of information in a new arrangement or structure with an interpretative or evaluative point of view.

6.11 REFERENCES AND FURTHER READING

Bhattacharya, G. "Information Analysis and Consolidation: Some Basic Considerations". *DRTC Seminar* (1981): Paper AA. Print.

Canada: International Development Research Centre. *Specialised Information Analysis Centres in International Development.* Ottawa:IRDC,1984. Print.

Kertsz, F. *Paper Presented at the Third Meeting of UNISIST Working Group on Information Analysis and Consolidation 12-16 Sept. 1983: Draft Guidelines for the Establishment of Information Analysis Centres and Information Consolidation Units.* Paris:UNESCO,1983. Print.

Saracevic, T. *A Course in Information Consolidation: A Handbook for Education and Training in Analysis, Synthesis and Repackaging of Information.* Paris: UNESCO, 1986. Print.

--- . "Process and Problems in Information Consolidation". *Information Processing and Management* 22.1(1986): 45-60. Print.

--- . and J. Wood. *Consolidation of Information. A Handbook on Evaluation, Restructuring and Repackaging of Scientific and Technical Information.* Paris:UNESCO,1981. Print.

Seetharama, S. *Information Consolidation and Repackaging – Framework, Methodology and Planning.* New Delhi: ESS ESS Publications, 1997. Print.

Stilwell, C., et al. *Knowledge, Information and Development: An African Perspective.* Pietermaritzburg: University of Natal ,2001. Print.

Sturges, P., and G.Chimsen. "Information Repackaging in Malwi". *African J of Lib. Archives and Information Science* 6.2(1996): 85-93. Print.

UNESCO. *Final Report of the UNISIST Working Group on Information Analysis and Consolidation.* Paris:UNESCO,1984. Print.

--- . *First Meeting of the UNISIST Working Group on Information Analysis Centres: Study Report on the Role of the Information Analysis Centres in World Science Information Networks.* Paris:UNESCO,1975. Print.

--- . *Second Meeting September 12-15,1978: Symposium on Information Analysis and Consolidation.* Paris:UNESCO,1978. Print.

UNIT 7   INFORMATION ANALYSIS AND CONSOLIDATION PRODUCTS

7.0   OBJECTIVES

After reading this Unit, you will be able to:

- describe the pre-requisites for information consolidation;

- discuss the concept of information analysis and consolidation (IAC) products resulting from information consolidation activities;

- explain the need for IAC products along with their characteristics and functions;

- enumerate different types of IAC products and describe the basic processes involved in their preparation;

- determine the channels by which information consolidation products will be delivered to the clientele;

- assess the techniques and methods by which IAC products can be effectively marketed to the target audience; and

- properly evaluate IAC products and services.

7.1 INTRODUCTION

We have discussed the concept of 'Information Analysis and Consolidation' in the preceding units (5 and 6) of this Block. It has been emphasised that the term 'Information Consolidation Activities' is used to define the responsibilities exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge.

Individuals or groups of individuals performing information consolidation activities would constitute an Information Consolidation Unit (ICU). User orientation and cooperation between subject specialists have been stated as fundamental requirements for the success of information consolidation. In other words, the paramount importance of users is recognised in this context. As a matter of fact, it is imperative to know the information needs and information behaviour of users and this knowledge is essential to the design of information consolidation products and services. The key to the direction and contents of all information consolidation activity are users. Therefore, the products and services should be highly user-oriented. This is the reason why the definition for consolidated information mentions prominently definite user groups to which information is to be provided. It is said that information consolidation products are determined with one eye on the user and with the other eye on the best available information on the subject. However, on the operational level, naturally the development of a product has to involve definition of processes and procedures by which the product will come into being and also of a unit that will carry out these processes. In this Unit, let us discuss briefly, a variety of possible information consolidation products based on user requirements.

7.2 DIFFERENT CATEGORIES OF INFORMATION CONSOLIDATION PRODUCTS

There are a large number of information consolidation products. The major types include the following:

- Reviews
- Reports
- Data
- Databases
- Technical Writings
- Handbooks
- Critical Studies
- Requests

It may be mentioned here that each of these products have their own requirement, criteria and procedures. For example, criteria and practices for reviews are different from those necessary for technical writings. In many instances, products also require restructuring of synthesised information.

In the following sections of this Unit let us try to know more about the following types of information consolidation products:

- Reviews and related products,

- State-of-the-art Reports,

- Handbooks,

- Statistical Reviews,

- Trend Reports, and

- Technical Digests.

7.3 REVIEWS AND RELATED PRODUCTS

In the spectrum of many possible information consolidation products, reviews occupy a special and most significant place. They are the examples of highest levels of intellectual re-processing of information. They are prepared by the subject specialists.In this era of information explosion, well prepared critical reviews are preferred by the researchers, particularly research scientists and technologists, over the widely scattered primary sources of information. Such reviews not only keep them abreast of the current developments in their own area of research, but also help them to have an overview of the related subject areas. The role of review in coping with the information problem also has been stressed in the international arena. One of the recommendations of the *1961 Pugwash Conference* held at Stowe, Vermont, gave particular attention to this need:

"We recommend that measures be taken to bring significant work going forward in all countries to the attention of interested scientists. This objective could be served by the publication of international review journals of two types: interdisciplinary review journals written in relatively non-technical language for the benefit of scientists in different disciplines, and more specialised review journals which would keep scientists working in a given area abreast of work going on in the same or related areas all over the World".

A number of user surveys have also revealed that there is an increasing demand for critical and carefully edited reviews. Such reviews are extensively used by scientists and technologists. For instance, *Annual Reviews* publications are amongst the most highly cited publications in scientific literature. " For instance out of 41 titles of Annual Reviews (published in disciplines within biomedical, life, physical and social sciences including economics), 34 titles received the ranking ranging from 1-8 in Journal Citation Report of 2011 in various disciplines. Journal Citation Report 2011 assessed 10,677 journals in 232 disciplines ."(http://www.annualreviews.org/)

Therefore, the need for and the value of reviews are well established. Also, the role of reviews is well delineated. Thus, there is much to draw upon when considering reviews and reviewing including a long established tradition.

7.3.1 Definition and Meaning of Reviews

The term 'review' in this context may be considered as a generic concept and covers a number of closely related products and types of reviews. It is defined "as a critical synthesis of the state of knowledge in a given subject or a topic; it is a critical examination of information and literature on a subject or topic accommodated in its broader framework". The review provides a narrative account of the progress of a particular subject field and it is prepared by an expert. By review, we mean the critical evaluative review and not just a summary or book review.

Reviews can be categorised according to their length, functions, expected readership and other characteristics. Reviews range from a short review article published in a journal or to a review monograph or a multivolume treatise in which chapters or volumes are written by different authors. A review may be a one-time or an occasional publication. It may be a periodical review published at regular or irregular intervals. Based on the intended readership, reviews may be written for subject specialists, students or general readers. Leitch categorises reviews into three general groups.

First is the **periodic type**, which deals with a limited subject area during a particular time interval and usually presents findings, with little or no analysis or critical evaluation. The main purpose of such a review is to inform reader of current developments in a field.

The second type is the **occasional review** which discusses a subject broadly and interpretively and need not cover all literature during a clearly defined period, for the author is expected to be selective and critical. The quality of such reviews varies greatly, depending on whether they deal chiefly with opinions or with findings.

The third type is the **analytical** or **constructive review**, which typically is of book length and deals with concepts or theories and findings. It is sometimes called the research review and often is undertaken to meet a specific need in an area – for example, to clarify issues and show where more information is necessary or to provide a basis for needed guidelines. It may deal with only one field or may establish or clarify relationships between fields and also affect a creative synthesis. In fact, review literature is not easy to categorise. Saracevic (1986) distinguishes two types of reviews:

i)   **Bibliographic** type of reviews emphasising the literature-oriented or bibliographic approach. Such type of reviews evaluate the contributions in a subject or topic within a defined period of time e.g. annually.

ii) **Instructional reviews** have a subject-oriented approach focussing on a particular scientific or technical problem and its solution. Many reviews combine the bibliographic and instructional role into one, the proportion varying according to the aim and audience for the review.

Preparation of reviews is an arduous task. It involves collecting, reading, digesting and evaluating scattered primary literature on a given subject. Then condensing their contents and putting each significant contribution in a proper perspective relating it to the general body of knowledge. In critical reviews large portion of

primary literature on the subject is eliminated and only significant contributions with full bibliographical details are brought to the attention of the reader. Since information conveyed by reviews is evaluated, assessed and related to general body of knowledge by a third person, reviews are found to be more effective in transfer of ideas and knowledge than the individual research paper. No original research is reported in reviews. Reviews are secondary sources of information, because they are based on other publications that contain primary information.

7.3.2 Functions and Uses of Reviews

There are two types of functions and uses of reviews:

1) Historical – those which are fundamental to the development of a subject or topic.

2) Contemporary – those which are beneficial to individual users. The description of these two functions is taken from Woodward (1974).

- Historical or Subject Functions

    i) The peer evaluation of published literature: this relates to passing of judgement on what is worth saving in a literature.

    ii) Collation of information from different sources: this acts as a unifying process for a subject or a topic and provides a continuing conceptual framework in which individual works may be viewed in perspective.

    iii) The compaction of existing knowledge: this comprises of extracting the parts of the papers containing new information only, leaving out portions that pertain to verifications, discussions, methods, etc., already known or subsumed.

    iv) The replacement of primary documents as the written record: replacing many scattered documents with one.

    v) The identification of emerging specialities: by bringing together various works, the emergence of new area may well be first identified in a review.

    vi) The direction of research and work: suggestions for further work.

- Contemporary or User Functions

    i) Informed notification of the published literature: this enables individuals to concentrate on the more worthwhile papers; summary which is worth knowing; selection aids.

    ii) Current awareness of related fields: this helps individuals to keep abreast of advances in field adjacent to their own, particularly useful for learning from different subjects or topics.

    iii) Back-up for other literature searching: this serves as a starting point for searching more current materials not yet covered in reviews.

    iv) Searching for alternative techniques: this helps in resolving methodological problems in own work; providing data; reference aids.

    v) Initial orientation in a new field: this provides basic didactic and bibliographic information from which to continue work in a new subject or topic.

vi) Teaching aids: these supplement or even replace textbooks.

vii) Feedback: provides a measure of researcher's own published works (the reviews are fairly used for this function).

viii) Inspiration: this provides suggestions and ideas for further work; stimulation for putting research into practice.

It may be mentioned that the patterns of use of reviews for various individual functions may differ significantly between various types of users. Furthermore, reviews can be specially structured and oriented to emphasise some of these functions and encourage or favour some of the uses.

7.3.3 Problems of Production

Depending on the audience to be addressed reviews may be written for specialists, students and general readers. It may be stated that the methodology for the preparation of reviews is essentially same as that followed in information analysis and consolidation. Production of reviews requires specialised subject knowledge. The selection of material to be included, its assimilation and interpretation, evaluation and finally its organisation into a meaningful and useful review article are time-consuming and arduous tasks, the responsibility for which has to rest almost entirely on the review writer. It has been observed that the research scientists, who have the ability to synthesise volumes of primary literature and prepare reviews, consider writing of reviews is less rewarding than the actual research. So they are reluctant to undertake the writing of reviews.

Various incentives, such as fellowship, sabbatical leave and prize for outstanding reviews have been suggested to make review writing attractive to the capable scientists. Keeping in view the importance of review writers and the difficulties they face, the Weinberg Report recommended that scientific and technical societies should reward their work with good pay and with the same regards that is normally bestowed on the experimental researchers. The Weinberg Report also recommended that specialised information centres should assist review authors by compiling bibliographies and making available copies of needed documents and translations.

7.3.4 Methods of Evaluating a Review

Evaluation is concerned with determination of the intrinsic merit, validity and reliability or in other words, the quality of information sources which will eventually be consolidated. Unfortunately, there are no objective criteria for measuring information quality. However, there is a general consensus as regards to what constitutes quality information. Most of the criteria that are considered for evaluation of information sources are considered appropriate in the context of evaluation of reviews also. In addition, there are a few more criteria which are meant for evaluation of reviews, stemming from the dual nature and multiple functions of reviews. The additional criteria are discussed below:

- **Completeness**: refers to the degree to which both the subject and literature on the subject were covered; the degree of insight shown.

- **Perspective**: meaning the direction, purpose, orientation, the degree of appropriateness in relation to both a given subject and for a given user group.

- **Analysis**: refers to the thoroughness, depth and breadth of analysis; degree of collation of information from different sources, degree of evaluation applied in analysis.

- **Synthesis**: means the degree of compactness-relations drawn; extent of superseding of previous information and literature, power of references; degree of drawing from related subjects; degree of evaluation applied in synthesis.

- **Value-added**: identification of emerging specialities; introduction of new hypotheses or theories, suggestions for future work (research, translation into practice, etc.).

- **Utility**: the extent to which a review serves the multiple functions and not only one or two functions.

7.3.5 Some Examples of Reviews

Annual Reviews: These are 'critical' or 'state-of-the-art' reviews published annually in book form on a broader subject, consisting of a number of review articles on its sub-disciplines written by subject experts. These are meant for specialists. For example, reviews published by Annual Reviews Inc., a leading publisher of annual reviews. The publisher publishes comprehensive critical reviews in 40 disciplines within Biomedical, Life, Physical and Social Sciences including Economics. Out of 40 tittles of Annual Reviews, some of the titles are as follows: *Annual Review of Analytical Chemistry; Annual Review of Biomedical Engineering; Annual Review of Cell Developmental Biology; Annual Review of Genomics and Human Genetics; Annual Review of Law and Social Sciences.* (http://www.annualreviews.org/)

Annual Reviews are also published by learned societies such as *Annual Review of Information Science and Technology* was published by American Society for Information Science (the ASIS has ceased to publish ARIST).

Advances Type, **Progress Type**: These are 'critical' and 'state-of-the-art' type reviews published in book form rather less frequently, such as once a year or sometimes in two to three years. Some examples are *Advances in Librarianship* Vol. 1 was published in 1970 and Vol. 33 published in 2011; *Progress in Semiconductors,* etc.

Journal Type: Some scholarly periodicals are devoted exclusively to publish critical reviews such as *Chemical Reviews*, a quarterly periodical published by American Chemical Society.

Popular Journal: Popular journals contain popular review articles in a particular subject area written in simple language which an educated person who does not have knowledge of that subject can understand. For example, *Science Reporter* (Monthly) published by Council of Scientific and Industrial Research, publishes popular review articles on contemporary science topics.

Essay Type: These reviews are tutorial types of reviews generally meant for students, teachers and lecturers. Such reviews are not for subject specialists. For example, *Essays in Radiology* published by Academic Press.

Monograph Series or Treatise Type: These reviews are irregular series of long treatises in a particular field, often forming a definitive work or milestone in the development of a subject. For example, *Treatise on Geochemistry* (10 volumes set) and *Treatise on Geophysics* (11 volumes set) published by Elsevier. Both the publications provide a comprehensive integrated summary of present state of knowledge in their respective field of study.

Year Book Type: Such reviews are in the form of state-of-the-art reviews and are generally published in the field of medical sciences. For example, *Yearbook of Diagnostic Radiology* published by Elsevier.

Self Check Exercise

Note: i)   Write your answers in the space given below.

ii)   Check your answers with the answers given at the end of this Unit.

1)   Explain the important functions performed by reviews.

....

....

....

....

....

2)   Briefly discuss the specific criteria for evaluating reviews.

....

....

....

....

....

7.4   STATE-OF-THE-ART REPORTS

State-of-the-art reports are particular category of reviews which do not have an all-encompassing scope and historical orientation. Saracevic defines a state-of-the-art report "as a review concentrating on the most up-to-date information and literature in a given subject or topic".

The main purpose of state-of-the-art reports is to describe a very recent situation when they reach their audience. In other words, they are timelier than traditional reviews and serve mostly as a current awareness tool. In order to achieve this currency, state-of-the-art reports are published as informal reports, prepared on demand, often oriented to a restricted clientele, sold at high prices and become obsolete quite fast.

The state-of-the-art report is used mostly in relation to technological topics and in business and commerce. In this section, let us try to discuss a few major types and know their uses.

7.4.1 State-of-the-art of a Technology

These types of reports summarise, compare and evaluate the advances, characteristics and / or utilisations of a given technology or technological products or process. They differ according to the intended use and audience. These reports generally highlight the following facets of the subjects:

• Technical and engineering aspects: They are directed towards technical personnel and engineers in particular. These reports are useful in technology design, deployment and purchase recommendations, comparison of characteristics and alternatives and keeping up-to-date with technology.

• Use aspects: They are directed towards users of technology emphasising details, characteristics, requirements and economics of use including comparative reliability, durability, etc.

• Management aspects intended towards policy makers on a higher level.

Examples:

i)   *On Knowledge to Information Extraction.*

    State-of-the-Art-Report

     Prepared by

   Robert Engels and Bernt Bremdal

    CognIT a.s., Asker, Norway

     July 2000

ii) *Alternate Concrete Acceptance Criteria*

   State-of-the-Art

    Final Report

    Prepared by

    Paul Mueller

    John P Zaniewski

  Centre for Advanced Research in Transportation

    Nov. 1987

iii) *Advanced Internet Technology – IV*

   State-of-the-Art Internet Technologies

    SOI Asia Project

     2008

7.4.2 Market Reports

Custom-tailored services responsive to the specific needs of a particular group should establish their acceptability by the quality of their performance in meeting the customer's needs. Market reports are one such category. These reports summarise the state of an industry or a market in terms of its existence, financial strength, economics, profitability, deployment, growth, characteristics, gaps, trends, potential, etc. As in technological state-of-the-art reports, these can similarly be oriented towards different uses and users. These reports are mainly useful in market decision and planning. Considerations of competition, opportunities and the like they must be prepared by experts in marketing aspects.

7.4.3   Statistical Reviews

The generation and dissemination of critically evaluated reference data are essential to the progress of science and technology. Statistical reviews present statistical correlations in a wide variety of technical, market, demographic, scientific and other areas. These essential correlations are specially composed and evaluated to show cross-dependence of trends. These statistical reports may be used for briefing of the decision makers.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

3)   What do you understand by the term state-of-the-art report? When are such reports used?

....

....

....

....

7.5   HANDBOOKS

Handbooks constitute one of the forms of review. Handbooks are very popular and have wide spread uses and markets. The appeal of the handbook is that it is a ready reference book. A handbook is a review concentrating on critical data (including chemical structures, mathematical formulae and the like) and/or guidelines for accepted and tested procedures, techniques, processes and standards. One does not necessarily read a handbook as one would read another type of review, but one consults the relevant portion at the time of need and extracts just that data or information which is needed. Production of handbooks is continuous operation in many cases. It may also be a one-time effort as in the case of UNISIST handbooks.

7.5.1   Types of Handbooks

There are many types of handbooks. Let us only concern ourselves with the major ones.

• Compilation of critical data and formulae on specific substances, processes, observations and/or phenomena type of handbooks are used mostly in science and technology for the purposes of experimentation, design calculations, construction, safety considerations, maintenance replacement, comparison, etc. It must be focussed here that critically evaluated data are essential to the progress of science and technology. Production of critically evaluated data compilations, as well as the production of reviews must be undertaken by Information Analysis Centres as an important activity. Some examples of such handbooks are: *CRC Handbook of Chemistry and Physics* and *CRC Handbook of Thermoelectric.*

- The second type of handbooks are those which contain guidelines for accepted, tested and/or recommended procedures and processes. These are actually aimed at doing things, for decisions related to processes and procedures, for learning. They might be found in different forms ranging from step-by-step pamphlets to how-to-do books and manuals, to extended discussions of options in given processes. For example, *Handbook of Rock Gardening on the Hills* (Edited by P.Kachroo and Priya Zarabi), Published by Indian Council of Agricultural Research.

- The third type of handbooks are those which contain descriptions and/or references of standards to be applied in accomplishing things actually. These can incorporate required standards (such as those in bibliographic work). There can be different types of handbooks containing tables, descriptions aimed at promoting harmonisation and interconnections. For example, *Laboratory Biosafety Manual* published by World Health Organisation; *GRIHA Manuals* Vol.1-5 published by The (erstwhile Tata) Energy Resources Institute (GRIHA (Green Rating for Integrated Habitat Assessment) is national rating system of India).

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

4) Briefly describe the types of handbooks and their usefulness.

....

....

....

....

....

7.6 TREND REPORTS

Trend reports constitute one of the important IAC products. They provide a systematic overview of new developments taking place in any subject along with current research trends. A trend report may also be considered a useful documentation service. It may be stated that a trend report provides an exposition of a subject, giving an account of general direction of research in a given subject based on a review of the recent literature. This type of service is mainly designed to help the specialist reader in the productive utilisation of her/his time and conservation of research potential. The special training received by the information professionals equips them to undertake this type of service. It may be emphasised that subject knowledge is a necessary component for preparation of trend reports.

7.6.1 Need for Trend Reports

In the age of information explosion and with proliferation of documents in any one subject, the existing documentation services like indexing and abstracting are not adequate to meet the specific demands of specialist readers. Special efforts in the form of value-added information services are required to satisfy such specialised information needs. Trend reports might be considered one such category.

7.6.2 Preparation of Trend Reports

The preparation of trend report on a specific subject by a documentalist is a useful form of information service. In the earlier times, trend reports used to be prepared by subject specialists, on the basis of documents accessible to them. However, development of new techniques in library and information science has enabled information specialists to undertake this responsibility. Information specialists are now in a position to view any subject in its proper perspective and track its progression and perceive the emerging trends. For this purpose, it is imperative that they possess the under mentioned qualities:

- familiarity with different components of the subject;

- knowledge of the exact subject requirements of the specialist for whom the trend report is addressed;

- know the techniques of compiling a trend report;

- they must establish proper rapport with the concerned specialist user to elicit her/his subject approach and views relating to its development;

- the information specialists involved in the preparation of trend report on a subject must be knowledgeable regarding the sources of information relating to that subject.

Equipped with the above qualities they should undertake the preparation of a trend report in a systematic manner.

Gopinath (1971) is of the opinion that the work relating to the preparation of a trend report may be conceived at three planes : i) idea plane, ii) verbal plane and iii) notation plane. The work of the *idea plane* comprises:

- Choice of the specific subject,

- Collection of ideas from different documents,

- Arrangement of these ideas into a helpful sequence, and

- Integrating the information obtained into an organised text.

On the other hand the work pertaining to the *verbal plane* involves:

- Use of homonym-free synonym-free technology, and

- Other factors associated with proper expression of ideas in a simple and yet effective language.

The third plane i.e. *notation plane* of this activity includes:

- Use of expressive notations for representation of the level of unity of ideas, and

- Structuring the text in a manner conceived in the idea plane.

Finally, it is essential that a trend report obtained as a final product of the procedure mentioned above will have: a) title page, b) contents page, c) brief informative abstract, d) index and e) appendix containing definitions for the technical terms used in the text of the report.

7.6.3 Some Examples of Trend Reports

1) *World Health Organisation (2008)*
   Trends in Cancer Research,
   Geneva, WHO. 2008.

2) *World Bank (2008)*
   Trends in Sustainable Development:
   Agriculture, Rural Development, Land, Diversification
   and Drought. Washington, D.C. World Bank, 2008.

7.7 TECHNICAL DIGESTS

The information professionals working in libraries and information centres in general and specialist organisations, create various products and services to meet the information requirements of their clients. The information professionals have additional responsibilities in planning and devising some specialised services which might meet the specific requirements of their users in a better way. Technical digests, as information products have been created and put into use to meet the information requirements of specialists, especially in industry and management environments. Let us try to understand what technical digests are, how they are planned, designed and prepared. It may be mentioned that the layout and presentation of technical digest must be helpful to the users to enhance its utility.

7.7.1 Definition and Meaning of Technical Digests

The dictionary meaning of a digest is "a short written report, which provides the most important part of a larger piece of writing or a short written report containing recent news". The term 'digest' is synonymously used with compendium and/or epitome. In other words, a digest may be defined as "Body of information or written matter, involving information consolidation by condensation. It is a compendium for information gathered from various sources, systematically and methodically arranged, classified under headings and sub-headings. It is prepared either on demand or in anticipation for quick and ready reference, with subject scope spanning from literary to science and technology". As for Guha (1983), "digest is actually fuller representation of a document, rewritten for a purpose or to suit the requirements of different group of people, but intended to serve as complete substitute for the original document". Digests are generally periodical publications containing condensation of works, gathered from many sources and arranged in a systematic order. A digest can be ad hoc publication prepared on request or it can be issued frequently at regular intervals in anticipation of demand. A technical digest is distinguished by the subject covered and its scope. In other words, the subject scope of a technical digest may be mainly science, technology and management aspects. Technical digests are products of condensation process.

7.7.2 Need for Technical Digests

Proliferation of scientific information and its wide spread scattering through a number of sources makes it difficult for the technical workers and people employed in industry to keep abreast of developments taking place in the field of their specialisation. Information products like technical digests help them to be aware of the latest developments taking place in the fields of their specialisation.

It must be emphasised that different categories of workers employed in different industries require digests with different contents. For instance, managerial personnel are generally interested in product-oriented information such as technical, commercial and marketing information. Technical digests incorporating with quality information will be of a great help to them in their decision making responsibility. Operators and other technical workers require information which will enable them to solve technical problems which they encounter in day-to-day work. Technical digests containing new ideas, processes may prove useful to them.

In essence, technical digests serve the following objectives:

- Keep different levels of workers in industry abreast of the developments taking place in fields of activity,

- Provide timely and reliable information relating to their fields of specialisation,

- Disseminate latest technical know-how, and

- Serve as an effective channel between research and production centres.

7.7.3 Categories of Technical Digests

Generally, we do not come across literature advocating specific categorisation in the preparation of technical digests. However, digests are prepared keeping in view the following levels of employees in the industry:

- Top management,

- Middle / supervisory management, and

- Operator level personnel.

It may be mentioned that the digests needs to cover the following components of information for the *top management:*

- Corporate management,

- Total quality aspects,

- Finance,

- Production,

- Research and Development (R&D),

- Personnel management (HRM),

- Sales,

- Public relations, and

- External regulations.

In the same way, the digest for *middle management* must incorporate the information of the following nature:

- Enhancing the utilisation of installed capacity,

- New production processes, techniques which can conserve the resources and maximise the production, and

- Problem solving and decision making aspects.

The digest meant for *workers and operators* should look to provide information which will enable them to:

- Solve day-to-day technical problems;

- Stimulate them to the processes of modernisation of existing methods and techniques of production; and

- Prepare them mentally towards mechanisation of existing tasks.

This is only a tentative categorisation which may be considered to be a guiding principle and the scope may be further broadened depending on the varying scenarios.

7.7.4 Planning and Design of Technical Digests

Systematic planning is the first step in the preparation of any value-added information product or service. The case of technical digest is no exception to this rule. Planning of technical digest involves the following steps:

- Identification of users and their information requirements;

- Sources of information to be consulted, collected and included;

- Analysis and consolidation of information; and

- Evaluation.

It must be emphasised that all these steps are essential in the preparation of any information product and are not special to the preparation of a digest and hence they are not discussed here. However, *know thy user* commandment is reemphasised in this context as well. Another point worth noting is that the most important sources for this purpose comprise: learned journals, newsletters, company reports and the trade sections, news sections and new product sections of journals as these aspects constitute nascent information. This, however, does not exclude other relevant information which can be culled out from any other category of sources.

7.7.5 Presentation and Layout of Technical Digests

Information consolidation has proved its effectiveness and potential for information transfer and communication. Its value-added characteristics, in different products and services, have definitely resulted in the increased use of information by different categories of users. It must be noted that the significance of information products lies not only in adhering to the four tenets: organisation, analysis, judgement and decision, but also the presentation of the material derived from these processes in a form which entices the users towards them. Therefore, careful consideration is made in the design and presentation of technical digests. The digest should not only collate, relate and link information from different sources relevant to the clientele, but also the terminology used in the digest must be such that it is intelligible to the users to whom it is addressed. Accuracy and authenticity of technical contents along with brevity, consistency and precision are qualities generally expected of a good technical digest.

Presentation

The following guidelines need to be observed for an effective presentation:

- The style of writing should be simple and user-centric;

- Accuracy of data and facts reported in the digest must be above reproach;

- Technical jargon need to be used where it is absolutely needed;

- The technical terms used in the digest need to be explained; and

- Tables, graphs and diagrams must be provided to enhance the utility of the digest.

Contents

The contents of the digest should include information on the following:

- How a new product or process is better than the ones already in existence?

- Whether any new material is used in the product. If so, how its availability for commercial use can be ensured?

- The benefits that accrue by using a new technology in terms of material, money and manpower.

- Whether the new technology envisages use of new equipment. If so, the description and availability of such equipment may be ensured.

Layout

Apart from the quality of the contents, the layout of the digest plays a very important role in its effective use. Hence, the essential points that should be observed in this regard are:

- The title of the digest should not only be appropriate vis-à-vis its contents but must be catchy;

- The digest should entice the initiator of the action i.e. the manager;

- It must focus as to how a reported idea would be more effective and emphasise its value in no uncertain terms, so that it immediately catches the imagination of the manager; and

- It is important to note that a short digest always increases the probability of its use.

Lastly, it is very important that references to sources from where the information included in the digest is culled out should be mentioned in the form of a bibliography. This certainly provides a mechanism for verification of authenticity and reliability of the information provided through the digest. For example, *TIDEE-TERI Information Digest on Energy and Environment* is published quarterly by TERI. Each issue contains a few articles, about 250 digests, a few news briefs and digests of websites, announcements of conferences, patents, standards, government notifications, etc. in the fields of energy, local and global environment and sustainable development. (http://www.teriin.org/)

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

5) Differentiate between Trend Reports and Technical Digests.

    ....

    ....

    ....

6) Explain the significance of design and layout in Technical Digests.

....

....

....

....

....

7.8 SUMMARY

The Unit commences with the explanation of information consolidation activities and points out the fact that user orientation and cooperation between subject specialists and information specialists as a necessary pre-requisites or fundamental requirement for their successful operation. The different categories of IAC products are then mentioned. It has been emphasised that key to the direction and contents of all information consolidation activity are users and therefore, the products and services should be highly user-centric. It is said that the information consolidation products are determined with one eye on the user and with the other on the best available information on the subject.

An attempt has been made to discuss and explain to you some of the important IAC products, their need, characteristics, functions and the processes involved in the preparation of these products. The Unit also considered the evaluation of these products so that they can effectively meet the requirements of the target audience.

7.9 ANSWERS TO SELF CHECK EXERCISES

1) Reviews are a specific class of information products which are common with the services provided by information analysis centres. Reviews may be considered as a critical synthesis of the state-of-knowledge in a given subject or its sub-discipline.

   In literature, we come across two kinds of functions associated with reviews:

   i) Functions which are fundamental to the development of a subject. These functions are known as historical functions.

   ii) The other functions are contemporary or user related functions which are useful to individual users. Reviews can be prepared to emphasise either of these functions.

   By historical functions, we generally understand the following aspects:

   • Critical evaluation of published literature, which indicates the significant contributions made to the development of the subject;

   • Collation of the information from different sources. In fact, these types of reviews provide the conceptual framework to the subject through which the individual contributions can be viewed and evaluated;

- Compaction of existing knowledge: this category of reviews present extracts from the papers containing new ideas and information leaving out the aspects of the knowledge, we already know;

- Discerning and identification of emerging specialities. As a matter of fact, this type of review identifies the emergence of new area in a subject by consolidating various works appearing in the literature of a particular discipline.

Among the user related functions attributed to reviews, the following aspects deserve special consideration:

- These serve as informed notification of the published literature. This enables the individual user to concentrate more on worth while papers and serve as a selection aid;

- Serves as a current awareness function. This function enables users to keep abreast of advances in fields adjacent to their own field of specialisation. This helps in cross fertilisation of ideas; and

- Back-up for the literature searching. One of the user-related functions associated with reviews is that it serves as a starting point for searching more current materials not yet available in reviews.

2) Criteria for evaluating reviews arise out of their dual function namely bibliographic and instructional. In many instances reviews from various information sources are considered for use in information consolidation process. In such a situation, reviews need to be evaluated as critically as the primary literature. In addition to the general criteria applied for evaluating information sources, some additional criteria need to be considered in case of evaluation of reviews. These pertain to:

- *Completeness:* refers to the degree to which both the subject and the literature on the subject are covered and the insight shown;

- *Perspective:* this relates to purpose, direction, orientation and degree of appropriateness in relation to a given subject and for a given audience (clientele);

- *Analysis:* the thoroughness, length and breadth of analysis, degree of collation of information from different sources and degree of evaluation applied in analysis;

- *Synthesis:* degree of compaction and relations drawn, extent of suppressing previous information and literature, power of inferences, degree of drawing from related subjects and degree of evaluation applied in synthesis;

- *Value-added:* identification of emerging specialities, introduction of new hypotheses or theories, and suggestions for future work serving as inspiration and stimulus;

- *Utility:* the degree to which a review can serve multiple functions.

3) State-of-the-art reports are a type of reviews which do not have an all-embracing scope and up-to-date-ness. The main purpose of such reports is to describe a very recent situation when they reach their clientele. In other words, the state-of-the-art reports are timelier than traditional type of reviews. Recent state-of-the-art reports are often published as informal reports and prepared on demand oriented to a specific group of users. These type of reports have a tendency of becoming obsolete quite fast. These publications are generally priced.

The state-of-the-art report is used mostly in relation to technological topics and in business and commerce. These are generally of three types:

- State-of-the-art reports,
- Market reports, and
- Statistical composites.

4) A handbook is a review concentrating on critical data (including chemical structures, mathematical formulae, etc.) and / or guidelines for accepted and tested procedures, techniques, processes and standards. They are popular and widely used, particularly in science and technology. There are different types of handbooks. The major one are:

i) Compilation of critical data and formulae;

ii) Guidelines for accepted, tested and/or recommended procedures and processes. These range from step-by-step pamphlets to how-to do books and manuals; and

iii) Standards: this type may range from tables to descriptions and discussions aimed at promoting harmonisation. In most cases production of handbooks is a continuous operation.

5) Trend reports provide systematic review of recent developments in a subject field along with current research patterns taking place. The main objective of trend reports is to briefly capture the major trends of research in a specific field based on the critical analysis of literature on a subject published during a specific period of time. The period under review may vary ranging from two to five years. Trend reports are useful to decision makers and help research workers in the productive use of their time and in the conservation of their research potential.

On the other hand, a digest is a systematic condensation of a written work, often prepared by some person other than the author of the original work. Generally, it is larger than a synopsis and sometimes with headings and sub-headings to facilitate quick reference. A digest may be prepared on request on a particular subject or it may be published frequently at regular intervals or in anticipation of demand. The term digest is synonymously used with compendium and/or epitome. In other words, a digest is a compendium of information gathered from different sources, systematically and methodologically arranged, classified under headings and sub-headings. In general, the subject scope of a technical digest is scientific or technical. Technical digest preparation involves condensation process and is directed towards a specific user group. Different levels of digests are prepared keeping in view of the following levels of workers in industry: top management, middle or supervisory management and operator level personnel.

6) Effective communication is one of the important factors to be kept in mind while preparing a technical digest. The contents of the technical digest should be appealing, but without sacrificing the technical value of the subject in the context. The presentation of the material should be intelligible and useful and for those to whom the digest is prepared. The following guidelines need be kept in mind to chalk out a scheme for an effective presentation and layout.

- **Contents**

i)   Must specially include as to how the new product or process is better than the existing ones.

ii) Are the materials used are entirely new or are they used in a new way?

iii) In case new materials are used, then what about the availability for commercial use?

iv) Does it involve new equipment? If so, is it readily available or can be fabricated locally?

- **Factors relating to layout to be kept in mind**

Layout is important for the effectiveness of the digest, in addition to the contents. Apart from other aspects, the points to be considered especially in the context of the layout are:

i)   The title should be arresting, descriptive and emphasise productivity application;

ii) Text should be short and should not exceed 3 to 4 typed pages;

iii) References to the sources, from which the information incorporated in the digest is culled out, should be clearly mentioned with full bibliographical details. This will help the users to consult the sources in case of need; and

iv) Tables, graphs, etc. must be drawn clearly and positioned at appropriate places. This will increase the value and usefulness of the digest.

7.10 KEYWORDS

Compendium	:	A short summary of the main points of a large work.
Digest	:	A condensation of descriptive text of information and an orderly presentation of core ideas in brief.
Epitome	:	A condensed account of any literary or scientific or technical work. It contains only the most important points of a document.
Market Reports	:	These reports generally present the state of an industry or a market in terms of its existence, financial strength, economic profitability, deployment of growth characteristics, etc.
State-of-the-art Reports	:	These are a type of reviews, which do not have an all encompassing scope and historical

orientation. These present information assembled from various sources subjected to the operations of analysis, synthesis, consolidation, extraction and evaluation in a formal presentation. They emphasise recency and up-to-date ness.

Statistical Reviews : This class of services present statistical connections in a wide variety of technical, market, demographic, scientific and other areas. These are specially composed and evaluated to show cross-dependence of trends. These are used for briefing of the decision makers.

Technical Digest : A digest service directed to enable executives, engineers, technical workers, etc. working in industries. It aims to provide up-to-date information.

Trend Report : It gives an account of the general direction of research in the subject based on the review of the literature on current developments in a subject.

7.11 REFERENCES AND FURTHER READING

Asundi, A.Y. "Technical Digests". MLIS-04, Unit-11. New Delhi: IGNOU,1994. Print.

Borowick, J. N. *Technical Communications and its Applications.* 2nd ed. New Jersey, Ohio: Prentice Hall, 1996. Print.

DRTC. "Digests for Management: Selection and Presentation of Ideas". *Seminar on Information Service for Business and Industry.* n.p.:n.p., 1974: File 5, 63-105. Print.

Guha, B. *Documentation and Information – Services, Techniques and Systems.* 2nd ed. Calcutta: World Press, 1983. Print.

Kaye, David. *Information and Business: An Introduction.* London: Library Association Publishing, 1991. Print.

Orna, Liz. "Information Design and Information Services: What Information Professionals Should Know about Design, in order to Deliver Value-Added Information Products". *ASLIB Proceedings* 44.9(1992): 305-308. Print.

Saracevic, T. *A Course in Information Consolidation: A Handbook for Education and Training in Analysis, Synthesis and Repackaging of Information.* Paris: UNESCO, 1986. Print.

--- . "Process and Problems in Information Consolidation". *Information Processing and Management* 22.1(1986): 45-60. Print.

Sastri, K. Chandrasekhara. "Preparation of Trend Report with Particular Reference to DRTC Training". *Library Science with Slant to Documentation* 7.4(1970): 365-72. Print.

<div style="float:left; font-weight:bold">Special Products and
Services</div>

Seetharama, S. *Information Consolidation and Repackaging – Framework, Methodology and Planning*. New Delhi: ESS ESS Publications, 1997. Print.

Subramanyam, K. "Review Literature". *Encyclopaedia of Library and Information Science*. Vol 26. NY: Marcel Dekker, Inc.,1979. 461-74. Print.

Waite, R. "Making Information Easy to Use: A Summary of Research". *Proceedings of the 29th International Communication Conference, 5-8, May 1982*. Boston, M.A:n.p., 1982. Print.

Weinberg, A. M. *Science, Government, and Information: Report of the Science Advisory Committee*. Washington, D. C.: U. S. Govt. Printing Office, 1963. Print.

Woodward, A. M. "Review Literature: Characteristics, Sources and Output in 1972". *Aslib Proceedings* 26.9(1974): 367-376. Print.

BLOCK 3   DOCUMENT DELIVERY SERVICE

Introduction

Block 3 comprises of unit numbers 8, 9 and 10 covering document delivery service (both manual and electronic) and translation service. Both these services are back up services of the library and are provided to the users on request. Document delivery service is concerned with supply of the document, in original or its copy, in print or non-print form, to the user on request. Translation service is concerned with meeting users' demands for translation of foreign language documents.

Unit 8 covers document delivery service in detail with respect to its origin, growth and impact of technology on the provision of the service. This Unit discusses types of document delivery systems/models for providing such a service. It also covers activities of some of the important document delivery/supply centres in Britain, Canada, France and India.

Unit 9 is exclusively devoted to the electronic document delivery service. It covers major electronic document delivery systems (EDDS) operating in the world. This Unit discusses how the availability of full-text e-journals and e-books on the Internet has expanded the scope of document delivery service (DDS) beyond traditional libraries and specialised document delivery centres. This Unit covers the activities of some of the important database producers, e-journal publishers, commercial online vendors and e-journal service providers as well as aggregators, who have joined the electronic document delivery service market. This Unit also points out the problems associated with the DDS operators and the role of international organisations in addressing these problems.

Unit 10 deals with translation service. This Unit discusses the growth, development and importance of translation service, particularly in the field of science and technology. This Unit also covers translation service provided by information centres in India and abroad and points out how lack of funding has resulted in the closure of International Translation Center along with its publications. However, increase in the use of the Internet, expansion of global trade and international cooperation has increased the demand for translation of electronic text on the Internet, such as translation of web pages, electronic mail and electronic chat, etc. This Unit describes major machine translation systems operating in the world and research activities in machine translation in India.

UNIT 8 DOCUMENT DELIVERY SERVICE: AN OVERVIEW

Structure

8.0 OBJECTIVES

After reading this Unit, you will be able to:

• explain the need for and importance of document delivery service;

• discuss the historical development of the service;

• describe the different types of systems/models for operating the service and their merits and demerits;

• highlight the impact of technology and its importance in improving the efficiency of the service; and

• describe the services of some of the national level document delivery centres operating in the world.

8.1 INTRODUCTION

In Unit 8 of the course BLI-222 you have been provided with an overview of information services that libraries and information centres are providing to their users. You have studied that current awareness services (CAS), indexing and abstracting (I/A) services regularly bring to the notice of the users the recently published literature in their subject field, which is scattered over a wide range of primary sources such as journal articles, research reports, conference proceedings, dissertations, monographs, etc. Producers of these services scan recently published literature in primary sources, select relevant items, arrange them in helpful sequence with full bibliographical details, index and bring them to the notice of the users. These services generate requests from the users for original documents listed in these publications. It may be in the form of a monograph, a journal article, a report or any other such item. To fulfil this need, libraries and information centres locate the required document from their own collections or procure it from outside sources and deliver it to the user. The service that supplies the required document to the user on demand is known as *'Document Delivery Service* (DDS)' or *'Document Supply Service'*. In this Unit, you will study how this service is being operated by the libraries and other document suppliers and the impact of technology on the provision of this service.

8.2 DOCUMENT DELIVERY SERVICE (DDS): DEFINITION

Document delivery service (DDS) is concerned with the supply of document, either in original or its copy in print or non-print form, to the user on demand. The Online Dictionary of Library and Information Science (http://www.lu.com/odlis/) defines DDS as follows:

"The provision of published or unpublished documents in hardcopy, microform or digital format, usually, for a fixed fee upon request."

DDS is the culminating point of all access services. Most of the other information services like CAS, A/I services and literature search service guide the users to the currently published sources of information, whereas DDS actually locates the document and supplies it to the user. DDS is an important service, since the value and importance of other access services are directly dependent on the efficiency of this service. For instance, if a user, alerted by a current awareness service, requires an original document listed in the service and if efforts are not made to supply the same to the user in time, then the CAS will have no value for the user. Thus, DDS adds value to other information services.

8.3 DEVELOPMENT OF DDS

Earlier, DDS was mainly concerned with the lending of required document to the user for a specified period of time by the library or information centre from its own resources and if not available within the library, then borrowing it from other libraries on inter-library loan (ILL) and lending it to the user. With the introduction of photocopy in mid 1950s and large scale use of photocopiers in libraries by 1970s, it was found that DDS was not just confined to lending of the documents, but documents could be duplicated and permanently given to the

users. The libraries started using photocopier for the supply of copies of documents, particularly of journal articles and chapters/parts of books.

8.3.1 Increase in Demand

The demand for document delivery service kept on increasing with the increase in the number of researchers primarily in the area of science and technology (S&T), followed by other disciplines. There were many factors which resulted in increasing the demand for DDS. For example, the exponential growth of published information, increase in the number of users and availability of online and CD-ROM bibliographic databases providing easy and timely access to published information, which resulted in a great demand for the original documents. At the same time, declining library budgets, increasing costs of the publications made it difficult for the libraries to meet the growing demands of their clients from their own collection. Libraries and information centres, with limited resources started looking for alternative means to fulfil the growing demands. Many libraries started relying on other libraries to supplement their collection to meet the information needs of their users. Over the years, what was earlier known as inter-lending grew into a planned system of inter-library cooperation which included not only sharing of resources but also sharing of other services like acquisition, classification, cataloguing, etc. To facilitate such cooperation, unified lists of documentary resources of cooperating libraries like union catalogues were compiled. At the same time, producers of bibliographic databases and online search service providers also started offering document delivery service, for example "Document Detective Service" from Chemical Abstracts Service (CAS) and "DIALORDER" service from DIALOG.

However, inter-library resource sharing systems had their own limitations, such as problem of updating the union catalogue, extra inter-lending burden on large libraries and withdrawal of some participating libraries. To overcome these problems, the need for specialised document supply centres, exclusively devoted to the document delivery service was felt.

8.3.2 Document Supply Centres

In response to the need for specialised document supply centres, many national centres came up around the world offering DDS service in a planned manner. Some of the document supply centres operating in the world are British Library Document Supply Centre (BLDSC),U.K.; National Library of Medicine, USA; National Research Council-Canada Institute for Scientific and Technical Information (NRC-CISTI), Canada; Indian National Scientific Documentation Centre (INSDOC now NISCAIR), India; and Institute de I' Information Scientifique et Technique (INIST), France. The document supply centres offer the service drawing upon resources ranging from comprehensive centralised planned collection to decentralised unplanned collection. You will study about the services of some of these centres in the subsequent sections of this Unit.

8.3.3 Types of Document Delivery Systems/Models

International organisations like UNESCO and IFLA have been playing an active role in promoting document delivery service and inter-lending both nationally and internationally. The main objectives of these organisations have been to improve document delivery and inter-lending services through the use of

technologies along with to increase cooperation among libraries and document suppliers. A number of publications have been brought out by these organisations suggesting national document delivery service models from time to time in the changing context of information technology.

Four basic national models suggested by Maurice B. Line (et al) in 1980 in a UNESCO document are as follows:

i)   A dedicated centralised collection;

ii)   Concentration on a few libraries;

iii) Planned decentralisation; and

iv)   Unplanned decentralisation.

In 1984, Vicker and Line described six types of models in IFLA UAP program document. These are as follows:

i)   Dedicated centralised service;

ii)   Central shared service;

iii) Concentration on a few libraries;

iv)   Decentralised planned provision, supply and retention;

v)   Decentralised unplanned access; and

vi)   Regionally based system.

In 1988, in an International Conference on Inter-lending and Document Supply, Hope E.A. Clement suggested following six composite models:

i)   A totally centralised national lending collection;

ii)   A central lending collection with back up libraries;

iii) A national lending centre;

iv)   A network of interlinked networks;

v)   Separate networks; and

vi)   Unlinked and total decentralisation.

Suggestions for these variant systems/models came up from time to time mainly due to the progress in information and communication technologies and use of these technologies in the provision of information services. All these models have their own merits and demerits. The extreme models viz. completely centralised and completely decentralised models have not been very efficient. Let us examine merits and demerits of each model in the following sub-sections.

Completely Centralised Planned Model

In this model, a comprehensive collection is especially developed in a single institution for providing DDS. The centre acts as a single source for service and supply of documents. It develops finding tools, which are necessary to provide service and also acts as a centre for international lending. The advantages of this model are:

i)   Being a single source for request and supply, it saves money;

ii)   Being a dedicated centre it provides an efficient service;

iii) Cost of handling requests is low;

iv) Speed of supply is high;

v) It relieves the individual libraries of inter-lending burden; and

vi) Demands and supply of documents can be analysed and monitored more effectively, which in turn help in collection building.

This system has some disadvantages. They are as follows:

i) Cost of building and maintaining the centralised collection in terms of stock, staff, equipment, building, etc. is very high; and

ii) It does not make use of existing library collection thereby leading to unnecessary duplication.

Completely Decentralised Unplanned Model

This model is based on the collection of large number of libraries. Individual libraries build a collection in their specific areas of interest and try to obtain loans from other libraries for document demands which they cannot meet from their own collections. There may or may not be a location tool, like union catalogue, for knowing the resources of other libraries. Moreover, in this system there is no focal point or a coordination centre to monitor the activity.

The advantages of this system are:

i) The libraries are free to build their own collection based on the local demands;

ii) They need not acquire additional sources; and

iii) They are not under obligation to participate in this cooperative activity.

However, this system has more disadvantages such as:

i) It is time consuming to locate the sources of loan;

ii) Since the cooperation is on voluntary basis, some libraries may refuse to lend their documents to other libraries;

iii) There is no coordination in building the collection. This results in unnecessary duplication;

iv) This system places the burden mainly on large libraries; and

v) There is no focal point to obtain or handle international loan requests.

Planned Decentralised Model

In this system a number of libraries build a collection in planned manner depending upon their areas of specialisation. In addition to a core collection, they acquire additional sources and are identified by the system to participate in this cooperative venture. Resources of the libraries are made known to each other by a union catalogue.

The advantages of this system are:

i) Requests for the documents can be sent directly. This saves time;

ii) Adequate collection can be built up to meet entire nation's requirement;

iii) The system does not place heavy burden on a particular library; and

iv) The planned collection building results in optimal utilisation of the collection budget.

9

This system also has certain disadvantages such as:

i) To provide efficient inter-lending service, libraries have to put in extra efforts in addition to their routine functions;

ii) Libraries are forced to acquire additional material which they normally do not purchase; and

iii) Since requests are directed to large number of libraries, the demand and supply of documents cannot be analysed and monitored effectively.

Partially Centralised Model with Back-up Libraries

In this model, an extensive collection of material, most frequently demanded, is built in a single institution. The centre makes use of resources of some back-up libraries to meet the residual demands. All demands are processed and monitored by this centre. It is centre's responsibility to locate the needed document from its own collection or from back-up libraries or from other sources and supply it to the requesting institution. It builds location tools as are necessary for the management of the service.

All the advantages of a completely centralised model are also applicable here, except that in this model some back-up libraries have to share inter-lending burden, though to a lesser magnitude.

The disadvantages of the system are also comparatively less than that of highly centralised model. One disadvantage is the high cost of building collection and the second is the inter-lending burden on other libraries.

The above comparison indicates that partially centralised model with back-up libraries is more effective than the other models.

8.3.4 Impact of Technology on DDS

The advent of computers, scanners and telecommunication technologies in 1980s made it possible to store the documents in electronic form and transfer the same electronically to long distances via telecommunication networks almost instantly. Many libraries and information centres started using this technology to deliver the documents. This greatly increased the speed of the service. The availability of full-text e-journals and e-books on the Internet and emergence of the World Wide Web in 1990s had the most significant impact on the document delivery service. The scope of DDS expanded beyond traditional libraries and specialised document delivery centres. Database producers, e-journal publishers, commercial online vendors, commercial e-journal service providers and aggregators have also joined the document delivery service market. The 'ISI Document Solution' from Institute for Scientific Information and 'Electronic Document Delivery Service' from Infotrieve, Inc. are some of the examples of this type.

8.3.5 Electronic Document Delivery Systems

As mentioned earlier, document delivery scene has changed with the emergence of a large number of electronic databases and establishment of telecommunication networks. Emerging technologies have also changed the mode of transmission of requests as well as supply of documents. Postal services used for transmission of requests are being replaced by telephone, fax, e-mail and online ordering. Mode of delivery of documents from supplier to the requester is also witnessing

similar type of change. Traditional document storage, retrieval and photocopying functions are increasingly being replaced by imaging technology. This technology uses series of devices that scan paper copy of the document, capture the document image and store it in digital format. The digital copy of the document is sent electronically via e-mail, fax or other document delivery software such as Ariel to the requester. The emerging systems employing electronic technology for receipt of requests and supply of documents are called Electronic Document Delivery Systems (EDDS). An EDDS can provide immediate access to the needed information. You will study about such systems in Unit 9 of this course.

8.3.6 E-Journal Consortia

Proliferation of e-publishing has brought in revolution in scholarly publications. At present most of the scholarly peer reviewed journals are available in print as well as in electronic form. E-journals with built in searching facilities, multimedia capability and remote access have influenced the scholarly community to such an extent that there is an increasing demand from them for providing electronic information services in the libraries. However, ever shrinking budgets of the libraries, exponential growth of e-publications and their escalating cost are making it difficult for individual libraries to meet this demand. Therefore, many libraries are joining to form a consortium for subscription to e-journals. A library consortium is a collective activity of a group of libraries towards a common goal of sharing resources. With the help of Internet access to e-journals, a user can search and browse table of contents of a journal, view abstract of the selected article and if desired, can browse and download the full-text article instantaneously on her/his desk-top computer. Consortium based library subscription to e-journals and electronic full-text databases are picking up good momentum in India. At present there are more than 10 national level consortia operating in the country. Some of them are INDEST, CSIR DST e-Journal Consortium now known as National Knowledge Resource Consortium (NKRC), IIM Consortium and INFONET. Consortium based access to e-resources have resulted in paradigm shift in DDS scenario. Most of the document supply centres are witnessing decrease in demand for delivery of documents, particularly of journal articles. You will study about these consortia and related changes in demand for document delivery service in Unit 9 of this course and also in BLI-221 course.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1) State the advantages and disadvantages of the partially centralised model with back-up libraries.

....

....

....

....

....

....

8.4 EFFICIENCY OF DDS

The efficiency of DDS depends on three factors namely, speed, cost and satisfaction level. Ideally, DDS should be cost-effective, delivered fast and should satisfy all the requests it receives.

8.4.1 Speed

The method of receiving requests and mode of delivery of documents directly affect the speed of the service. Requests may be received by post, telephone, fax, electronic mail or online systems. Documents may also be supplied by any of the above mentioned methods. Of the above mentioned methods, receipt of the request online and delivery of the document via electronic document delivery system is the fastest. In the traditional DDS, the speed of the service is also affected by factors, such as location of the document within the library and if not available, then time taken to find its location, transmitting the request, processing the request by the supplying library, receipt of the document by the requesting library and finally the delivery of the document to the user. All these factors affect the speed of delivery of the document. It may range from a week to a month. In case of EDDS, it takes as little as two hours for rush service and a day for standard service.

8.4.2 Cost

DDS should be cost effective. In devising cost effective service all type of costs, direct as well as indirect, are taken into consideration. Direct cost is the cost of operating the service like cost of processing the request, copying the document, postage, etc. Indirect cost includes cost of collection, building, salaries of staff, cost of equipment, etc. The service is more cost effective, if it is offered from a centralised collection and number of requests is large. Conversely, the service is less cost effective when it is offered from a decentralised collection. It is increasingly being realised that the service can be more cost effective if it is operated by building a core collection to meet primary needs of the users and for residual requests, accessing the material speedily from external sources electronically.

8.4.3 Satisfaction Level

This is based on the number of requests satisfied out of total number of requests received by a library or a document delivery centre. Ideally, a DDS should satisfy all the requests it receives, but this target is not achievable even from a most comprehensive centralised collection. In general, a satisfaction level of 90-95 per cent is recommended and considered satisfactory.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

2) Define document delivery service and state the factors that govern the efficiency of this service.

....

....

....

8.5 DOCUMENT SUPPLY CENTRES: SOME EXAMPLES

You have studied in section 8.3 of this Unit that the document delivery service is not only confined to libraries and specialised document supply centres, but many others have also joined the DDS market. DocDel.net - A Gateway to World Document Delivery Resources lists over 200 such service providers in the world and provides links to them. The directory of DocDel.net lists document delivery service providers under three categories viz. i) subject specialists, ii) full service providers, and iii) suppliers outside US. Instant Information Systems, located in Washington D.C., maintains the DocDel.net (http://www.docdel.net/) and DocDel Listserv. DocDel Listserv is an open group of over 1000 members who are dedicated to the topic of document delivery. In this section you will study about the services of some of the document supply centres, who offer DDS at national as well international level.

8.5.1 British Library Document Supply Centre (BLDSC), Boston Spa

The British Library has one of the largest collections in the world which BLDSC is using for the purpose of remote document delivery. It covers areas such as science, technology, medical and human knowledge in a number of languages of the world. The British Library (BL) holds 14 million books; 920,000 journal and newspaper titles; 58 million patents; and 3 million sound recordings. With this huge collection, during 2011, the British Library has delivered more than 1.6 million documents in many languages in the areas ranging from science, technology to medicine. BLDSC is also providing scanned and digitized print and microform resources for document delivery. The following services are offered from its digitised collection:

- BLDSS;

- British Library Direct Plus;

- British Library Publishers Digitization Service;

- BLDSS Loan Service;

- British Library Reprints;

- Electronic Theses Online Service (ETHOS);

- Higher Education Scanning Service; and

- License Our Data.

British Library Document Supply Service (BLDSS) (earlier known as British Library Direct Service): British Library Direct was an integrated service which included copyright fee paid document delivery and current awareness service. Offered since 2005, this service used to provide online access to table of contents of highly used journals in BLDSC and access to 5 years old full-text journal archive. It was a subscription based service, but it offered free access to bibliographic records and abstracts of articles. Access to full-text article(s) was on payment basis. Over 40,000 researchers were registered users of this service.

This service has now been replaced by a new online ordering system called BLDSS (British Library Document Supply Service). This also is a subscription

based service. This new service provides the customers with keyword searching for over 42 million articles and more than 12.5 million journal articles with immediate download facility. This service facilitates electronic downloading of documents needed by customers. This service gives customers the information regarding time of delivery, price, etc. The customers can also track their orders online. With the introduction of BLDSS, the document delivery service of the British Library (BL) has become more efficient and quality based.

British Library Direct Plus: It is a subscription based service which allows simultaneously searching three databases viz. British Library ETOC (Electronic Table of Contents), Google Scholar and Pubmed databases. Launched in 2007, this service replaces British Library "Inside" service. The service provides online access to over 300,000 journal titles and 400,000 conference proceedings. It allows archival searching dating back till 1940. The service allows searching of all the three databases by entering keywords or phrases. The number of results retrieved from each database, are displayed. The service permits viewing bibliographic records with or without abstracts for free. The service also has a range of bibliographic management tools.

After that the British library announced Direct Plus 2.0 with additional features. Now, the BL in partnership with TDNet is providing British Library Direct Plus service. This joint venture is subscription based. It combines the federated search feature of the TDNet and the BL's comprehensive online collection. With this service a customer can search the BL's electronic table of contents, PubMed Central and Google Scholar and place order with the BL.

British Library Publishers' Digitization Service: Under this service the library undertakes digitisation work of old publications of the publishers.

BLDSS Loan Service: The British Library offers loan services to both commercial and non-commercial organisations from its collection of 3 million English language books. Loans are offered only to the organisations and not to individuals.

British Library Reprints: Under this service the British Library places order for the original reprints on the behalf of the user direct from the publisher with full copyright compliance. A user can place order through the library for multiple copies of a document for training or marketing purposes through this service. Multiple copies are supplied in print (Reprint) or in electronic (ePrint) format.

Electronic Theses Online Service (EThOS): This service provides free online access to over 300,000 plus U.K. theses. One can search the database free of cost and access full-text theses on payment basis.

Higher Education Scanning Service: The materials which are covered by CLA (The Copyright Licencing Agency) HE Photocopying and Trial Scanning Licence, can be supplied to the customers through this service. Institutions which are holding the licence can order material for course packs from the British Library under this service. The licence permits the British Library to deliver paper based materials in PDF version. The PDF files are loaded on the library server. The customers get information through e-mail about the availability of their document(s) on the server and they can download the files within 14 days.

Licence Our Data: The British Library has bibliographic data from over 200,000 journals and 5 million conference papers. The library has 12 years archive for each journal. From this electronic database, the organisations can make use of the data, under licence agreement with The British Library, either for the whole file or for subject specific sub-set, or for specific journal titles.

(http://www.bldss.bl.uk/BLDSS/)

(http://www.bl.uk/reshelp/atyourdesk/docsupply/productsservices/index.html/)

8.5.2 National Research Council – Canada Institute for Scientific and Technical Information (NRC-CISTI), Canada

NRC-CISTI is a document delivery centre having the largest sources of information in science, technology, engineering and medicine subjects covering North America. The collection include over 50,000 different serial titles, 800,000 books, conference proceedings, technical reports and 2 million technical reports on microfiche. NRC-CISTI offered document delivery services from its own collection and for documents not available in house, it offered extended supply service, which provided access to articles, books and other documents around the world. Its service levels included *Direct Service; Extended Supply Service; Urgent Service; and Special Handling* and the ordering options were *Electronic Ordering and Non Electronic Ordering*. Its delivery options included *Ariel; Secure Desk Top Delivery; Fax and Courier services*. NRC-CISTI has recently withdrawn from document supply business (with effect from April 2010) and has awarded the contract to Infotrieve Canada, Inc. to take over its collection of scientific, technical and medical (STM) and existing customer base. Infotrieve, Inc. with experience in information centre technology development and document delivery for more than 20 years, is collaborating with NRC-CISTI in providing document delivery service for CISTI's clients and business partners.

(http://cisti-icist.nrc-cnrc.gc.ca/eng/ibp/cisti/about/index.html)

8.5.3 Institute for Scientific and Technical Information (INIST), France

INIST was formed in 1988 by the merger of two documentation centres located in Paris. These two documentation centres cover scientific and technical information and humanities and social sciences information. The mission of INIST, which is located in the city of Nancy in Eastern France, is not only to continue the traditional activities of the previous documentation centres i.e. document delivery and bibliographic databases, but also to carry them into new developing technological environment.

With the advent of the Internet, the role of INIST has evolved towards providing public sector researchers with direct and personal access to scientific information they need while continuing with its traditional document delivery and bibliographic activities. At present, INIST is actively involved in activities concerning electronic resources negotiations and electronic resource sharing, electronic publishing, electronic archiving, science monitoring and information analysis and processing.

(http://www.inist.fr/)

Document Delivery Service of INIST**:** Refdoc (The reference in scientific document supply) is a new service for ordering scientific and technical documents from INIST. Refdoc provides access to over 53 million records of articles, books, reports, conference proceedings, theses, etc. in the fields of science, technology, medicine, humanities and social sciences from the year 1823 to the present day. The database is updated daily. One can search as well as place order with Refdoc. INIST uses its extensive document collection plus network of libraries and documentation centres to fill the document orders it receives. INIST's online services for providing access to for example, Article@INIST (for INIST catalogue of articles), Form@INIST (for document orders), Compte@INIST (for document delivery) have been replaced by Refdoc service.

(http://www.refdoc.fr/)

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

3)   Name the services offered by the British Library Document Supply Centre (BLDSC).

....

....

....

....

....

8.5.4   Document Delivery Service of NISCAIR (Formerly INSDOC), Delhi

NISCAIR (Formerly INSDOC) has been offering Document Procurement and Supply Service at a national level since its inception in 1952. This service is based on the decentralised collection of resources held in major libraries in India including its own library i.e. National Science Library (NSL). While providing such a service NISCAIR uses its own collection of about 1,20,000 bound volumes of periodicals. NSL subscribes a total of approximately 1250 Indian and 300 plus foreign periodicals and about 4256 international electronic journals. The requests are received by mail, fax or e-mail. The location of the required document is identified by using the database of **NUCSSI** (National Union Catalogue of Scientific Serials in India). NUCSSI database has information on 45,433 periodical titles pertaining to 564 major S&T libraries in the country. When requests for document delivery are received, they are sorted out on the basis of availability of source documents. First, the requests are met from NISCAIR's own library collection, then from Delhi based libraries and if not available, then requests are met from other libraries in India or from foreign countries. Some of the important Delhi based libraries utilised for document delivery purposes are Indian Agricultural Research Institute's Library; National Medical Library and Delhi University Library. It has been observed that maximum number of demands (over 80%) is for journal articles.

Contents, Abstracts and Photocopy Service (CAPS): This is another form of document delivery service offered by NISCAIR. Under CAPS service, the subscribers receive table of contents of selected journals (15 titles for individual subscriber and 30 titles for institutional subscriber) every month from a list of core 7300 Indian and foreign periodicals pertaining to various S&T disciplines. The service is available to subscribers on paper, diskette or through e-mail. On browsing the contents, one can place order for abstracts and/or photocopies of full-text articles. NISCAIR also provides on the spot photocopies of articles from its own collection to the students and researchers who visit the library.

NOPR (NISCAIR Online Periodicals Repository) provides free access to full-text articles from 17 research periodicals published by CSIR. The Repository at present provides access to over 15766 articles. One can search the database by periodical title, article title, authors, keywords and date of publication.

NKRC (National Knowledge Resource Consortium) (erstwhile CSIR DST e-Journal Consortium): This is CSIR's Network Project with NISCAIR as an implementing agency. Under this project CSIR laboratories are provided online access to over 5000 plus e-journals of all major publishers, patents, standards, citation and bibliographic databases. The access is provided on 24x7x365 days basis to all the scientists of CSIR laboratories in cost-effective manner. The scientists can search and download full-text article instantaneously on their desktop. NISCAIR serves as a nodal agency for e-journal consortium. It deals with publishers and CSIR laboratories, monitors the usage statistics, and organises training programmes for the end-users.

NISCAIR also provides **walk-in-user** facility to use the consortium to other researchers who visit the Institute. There has been constant increase every year in the number of articles accessed and downloaded by the researchers/scientists. The number of full-text articles downloaded were 16,72,000 in the year 2009 as against 16,34,000 in the year 2008. (NISCAIR Biennal Report 2008-10).

8.5.5 Document Delivery Service of INFLIBNET Certre, Ahmedabad

Information and Library Network (INFLIBNET) Centre is an autonomous Inter-University Centre (IUC) of the University Grants Commission (UGC). It is involved in modernising university libraries, connecting them as well as information centres through nation-wide high-speed data network for optimum utilisation of information resources. Infrastructure is being created for sharing of information resources and services among academic and research libraries. INFLIBNET works collaboratively with Indian university libraries to shape the future of academic libraries in the evolving information environment.

INFLIBNET has started document supply service based on the collection of subscribed journals within the UGC-INFONET Digital Library Consortium and the journals' collection of 22 libraries designated as document supply centres. These 22 libraries subscribe to over 2,000 journals which are not available through the consortium. The document supply facility is available through JCCC@UGC-Infonet, which provides access to 149 Indian universities for articles from journal holdings of participating libraries. The JCCC (J-Gate Custom Content Consortium), interface facilitates searching articles in:

i) Journals subscribed through UGC-INFONET Consortium;

ii) Journals (print and e-journals) subscribed by 22 document supply centres;

iii) Journals subscribed by other member libraries; and

iv) Open access journals.

The interface of JCCC provides a hyperlink to articles so that user can access and download the articles accessible to their university. The journals which are not accessible to the users in their own university, the interface facilitates semi-automatic generation of a document supply request directly from user to INFLIBNET Centre or to one of the document supply centres. The software also tracks the request history as well as status of the request.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

4) Describe document supply service of INFLIBNET.

....

....

....

....

....

8.6 SUMMARY

Document delivery service is one of the important services of a library and information centres. While most of the services of a library and information centre lead to the identification of the original document, this service actually locates the original document, irrespective of its location and delivers it to the user. The main points discussed in this Unit are:

• Document delivery service, it's necessity and the characteristics;

• The development of document delivery service, impact of technology on the service and emergence of electronic document delivery systems and e-journal consortia;

• Types of document supply systems/ models – their merits and demerits; and

• Some examples of national document delivery centres operating in the world.

8.7 ANSWERS TO SELF CHECK EXERCISES

1) The partially centralised model with back-up libraries has following advantages:

a) Since it is single source of request and supply, it offers simple procedure for inter-library loan and service transactions. This saves time and money.

b) Being a dedicated centre, it provides efficient service.

c) Cost of handling requests is low.

d) The demands and supply of documents can be analysed and monitored more effectively. This helps in effective collection building.

The disadvantages are:

a) Cost of building and maintaining centralised collection in terms stock, staff, equipment, building, etc. is high.

b) It puts inter-lending burden on other back-up libraries.

2) Online Dictionary of Library and Information Science defines document delivery service as: "The provision of published or unpublished documents in hardcopy, microform or digital format, usually, for a fixed fee upon request."

The efficiency of DDS depends on three factors namely, speed, cost and satisfaction level. Ideally the DDS should be cost-effective, speedily delivered and should satisfy all the requests it receives.

3) British Library Document Supply Centre (BLDSC) has largest collection devoted to the provision of remote document delivery. It offers range of integrated document delivery and current awareness services from its digital collection. These are:

- BLDSS;
- British Library Direct Plus;
- British Library Publishers Digitization Service;
- BLDSS Loan Service;
- British Library Reprints;
- Electronic Theses Online Service (ETHOS);
- Higher Education Scanning Service; and
- License Our Data.

4) Document delivery service of INFLIBNET is based on the collection of subscribed journals within the UGC-INFONET Digital Library Consortium and the journals' collection of 22 libraries designated as document supply centres. These 22 libraries subscribe to over 2,000 journals which are not available through the consortium. The document supply facility is available through JCCC@UGC-Infonet, which provides access to 149 Indian universities for articles from journal holdings of participating libraries. The JCCC (J-Gate Custom Content Consortium), interface facilitates searching articles in

i) Journals subscribed through UGC-INFONET Consortium;

ii) Journals (print and e-journals) subscribed by 22 document supply centres;

iii) Journals subscribed by other member libraries; and

iv) Open access journals.

The interface of JCCC provides a hyper link to articles so that user can access and download the articles accessible to their university. The journals which are not accessible to the users in their own university, the interface facilitates semi-automatic generation of a document supply request directly

from user to INFLIBNET Centre or to one of the document supply centres. The software also tracks the request history as well as status of the request.

8.8 KEYWORDS

Consortium	:	An association of independent libraries and/or library systems established by formal agreement, usually for the purpose of resource sharing.
Centralised Model	:	In this model comprehensive collection is especially developed in a single institution for the sole purpose of document delivery service. The centre acts as a single source for service and supply of documents.
Decentralised Model	:	This model is based on the collection of large number of libraries. Individual libraries build collection in their specific areas of interest and try to obtain loan from other libraries for the demands they cannot meet from their own stock.
Inter-library Loan	:	When a book or other items needed by a registered borrower is not available or owned by the library, then the library procures it from other library on inter-library loan and lend it to the borrower for a specified period of time.
Inter-library Resource Sharing	:	The activities that results from an agreement, formal or informal, among a group of libraries to share collection, data, facilities, personnel, etc. for the benefit of their users and to reduce the expense of collection development.
Union Catalogue	:	A list of holdings of a group of libraries in a library system.

8.9 REFERENCES AND FURTHER READING

Desale, Sanjay K. "Resource Sharing and Document Supply in India: INFLIBNET and the Experience of JCC@UGC-INFONET at the University of Pune". *Interlending and Document Supply* 37.4(2009): 208-14. Print.

Gillet, Jaqueline. "Sharing Resources, Networking and Document Delivery: The INIST Experience". *Interlending and Document Supply* 36.4(2008):196-202. Print.

Grahm P, Cornish, and Alison Gallico,eds. *Proceedings of International Conference on Interlending and Document Supply*. 1988. Boston Spa: Office for International Lending,1989. Print.

Line, Maurice B., et al. *National Interlending System: A Comparative Study of Existing Systems and Possible Models*. Paris: UNESCO, General Information Program,1980. Print.

McGrath, Mike. "Interlending and Document Supply: A Review of the Recent Literature". *Interlending and Document Supply* 37.4(2009):199-207. Print.

Vicker, Stephen, and Maurice B Line. *Improving the Availability of Publications: A Comparative Assessment of Model National Systems*. Boston Spa: IFLA International Program for UAP, British Library Lending Division,1984. Print.

Websites

(http://www.refdoc.fr/tradure=en/)

(http://cisti-icist.nrc-cnrc.gc.ca/eng/ibp/cisti/about/index.html)

(http://www.bl.uk/reshelp/atyourdesk/docsupply/productsservices/index.html/)

(http://www.inist.fr/)

(http://www.inflibnet.ac.in/)

(http://www.niscair.res.in)

UNIT 9 ELECTRONIC DOCUMENT DELIVERY SERVICE

Structure

9.0 OBJECTIVES

After reading this Unit, you will be able to:

- define electronic document delivery system and service;

- explain how electronic document delivery systems are increasing the efficiency of document delivery service;

- identify the important electronic document delivery systems operating in the world;

- discuss the problems associated with electronic document delivery service; and

- highlight the emerging trends in electronic document delivery service.

9.1 INTRODUCTION

We have observed that scholarly journal and its associated services such as current awareness services, indexing and abstracting services have undergone significant changes due to electronic publishing, emergence of the Internet and the World Wide Web. All these secondary services are offering personalised and customised products depending upon the needs of the individual user. However, the emergence of e-journals has made the most significant impact on these services. Traditional

publishers have started making available electronic versions of their journals on the Internet. Now, many bibliographic databases are providing links from journal citation to its full-text articles in e-journals. The libraries through licence agreement with publishers provide online access to full-text journals and articles within journals. With this facility the library users can get access to full-text journals on their personal computers. They can browse through the articles and if found useful can have print-outs of the same. Many libraries have joined e-journal consortia to have access to computerised bibliographic databases as well as full-text e-journals for their users. Many journal publishers, database producers, aggregators and subscription agents are offering scholarly full-text e-journal services for individual libraries or for library consortia.

All these developments have made a significant impact on document delivery service (DDS). The scope of DDS has expanded beyond traditional libraries and specialised document delivery centres. Database producers, e-journal publishers, commercial online vendors, commercial e-journal service providers and aggregators have also joined the document delivery service market. Moreover, with the emerging technologies, traditional document delivery systems have also been changed to electronic document delivery systems where a digital copy of the document is sent electronically to users. In this Unit, you will study about electronic document delivery systems and services operating in the world and also about the associated problems of using and accessing digital documents along with the role of international agencies in addressing these problems.

9.2 ELECTRONIC DOCUMENT DELIVERY SYSTEMS AND SERVICES

Systems which employ electronic technology for receipt of request and supply of documents are known as Electronic Document Delivery Systems (EDDS). "British Library Direct (now BLDSS)" and "British Library Direct Plus" are some of the examples of EDDS. Online Dictionary of Library and Information Science defines Electronic Document Delivery Service as "The transfer of information traditionally recorded in a physical medium (print, videotape, sound recording, etc.) to the user electronically via e-mail or World Wide Web. The libraries employ digital technology to deliver the information contained in the documents and files placed on reserve and requested via inter-library loan."

EDDS provides immediate access to the needed information. In such systems, the request may be received by telephone, e-mail, Fax or online ordering. The document is sent electronically via e-mail, Fax or document delivery software like Ariel. EDDS can provide instant access to material needed. Apart from speed, it is the convenience in accessing information which makes EDDS the preferred method over traditional document delivery methods.

9.2.1 ADONIS (Article Delivery over Networked Information System)

ADONIS, a full-text CD-ROM storage and retrieval system is initiated and developed by a consortium of biomedical publishers. It can be considered as one of the earliest examples of electronic document delivery systems. ADONIS started as a trial project. Ten international publishers, concerned about the widespread photocopying of their material, developed an optical disc system to create journal

archives for the sale of single article on demand. In ADONIS, the journals were scanned as soon as they were published. The machine-readable images were stored on CD-ROM, which were shipped to participating libraries and document delivery centres along with cumulated indexes for searching the articles. ADONIS also supplied two sets of software, one for article retrieval management and other for generating statistics of usage. ADONIS provided on-screen page browsing as well as printing facility. Libraries receiving CD-ROM disks, searched the articles on their personal computers with compatible CD-ROM drive. The required article could be sent to the user by mail or by fax. The printing was automatically monitored on site in the libraries and quarterly reports were generated and sent to ADONIS for per article billing. After two years of trial period, ADONIS was launched commercially in 1991, providing full-text articles of 850 biomedical journals from over 70 publishers to the subscribing libraries. The annual subscription fee was about 16,000 U.S. dollars. ADONIS stopped this CD-ROM product in the year 1997. The availability of full-text e-journals on the Internet, offering wide range of options, like online searching, viewing and pay-per-article basis, led to the closure of this product.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1)   Define electronic document delivery system and state its advantages.

....

....

....

....

....

....

9.2.2   Inter–library Loan Service of Online Computer Library Centre (OCLC)

The Inter-library loan (ILL) service of OCLC is the world's largest online computerised ILL service used by thousands of libraries, resource centres and document suppliers around the world. OCLC is an online library network which was set up in 1969 in the USA to facilitate cooperative computerised cataloguing. Over the years, the number of libraries increased and the size of the union catalogue (known as WorldCat) grew manifold. At present more than 72,000 libraries, archives and museums in 170 countries are using OCLC services to locate, acquire, catalogue, lend and preserve library material. WorldCat, a worldwide union catalogue created and maintained by over 25,000 OCLC member libraries has approximately 2 billion holdings in more than 470 languages. In WorldCat every 10 seconds a record is added and its database is searched every one second by the users. As WorldCat grew, the combination of bibliographic records and library holdings made it a useful resource for inter-lending purposes as well.

OCLC ILL system is a fully automatic networked borrowing and lending system. A borrowing library sends an online request to potential lending libraries. Each lending library in the system has a total of 4 working days to respond to the request before it is passed on to the next lending library. The ILL system automatically forwards the request in turn to the next lending library until the request is fulfilled. After agreeing to supply the item, the lender library adds to the ILL record information concerning the restriction of use of the loaned item, the mode of delivery, due date and charges to be paid. In terms of level of service, as the system is library-to-library, this is negotiated between borrower library and lender library. OCLC ILL system is integrated with OCLC FirstSearch reference service (providing access to more than 60 databases) as well as WorldCat. Users can access more than 258 million records via WorldCat. A request is filled through WorldCat resource sharing every 4 seconds and around 95% of the requests are satisfied.

'OCLC ILLiad' is a web-based Resource Sharing Management Software, which automates routine inter-library loan functions. It manages borrowing, lending and delivery of journal articles through a single window-based interface. It has a seamless integrated interface to both WorldCat and OCLC ILL system. It is also integrated with OCLC's FirstSearch and other open URL services. Library users can send requests directly and track the requests electronically through the Web. ILLiad processes requests and contacts the user when request is completed and delivers the documents to the user's desktop electronically. It generates detailed reports in real time that helps the library to track the workflow. Lending reports help the borrowing library to view up-to-date tracking information sent through the online system. Users can access and track their requests from any web browser. ILLiad can send, receive and track requests from NLM's DOCLINE service. It is also an ISO compliant and allows peer-to-peer lending through ISO ILL. OCLC ILLiad software was developed by inter-library loan staff of Virginia Polytechnic Institute and State University and has been expanded and enhanced by Atlas Systems Inc. Atlas is supporting and developing this product for OCLC. (http://www.oclc.org). (http://www.oclc.org/illiad/).

9.2.3 DOCLINE System: ILL System of National Library of Medicine, USA

DOCLINE system is an automated inter-library loan (ILL) request routing order and referral system of the National Library of Medicine, USA. The purpose of this system is to provide efficient document delivery service among libraries in National Network of Libraries of Medicine (NN/LM). The system provides efficient document delivery service by linking the holdings of member libraries and routing the ILL request quickly throughout the network. ILL requests can be created, edited, routed and filled in DOCLINE system. DOCLINE participants can also check the status of their requests. DOCLINE is available 24 hours a day, seven days a week for use. There are no charges for participating in DOCLINE system. Inter-library loan charges vary from institution to institution. If a request is received and not acted upon within three working days, DOCLINE automatically sends the request to another potential lender. A request is only forwarded to institutions that are members of Electronic Fund Transfer System (EFTS). EFTS is a billing system used by medical libraries in the U.S. and Canada.

DOCLINE serves more than 3200 U.S., Canadian and Mexican medical libraries. DOCLINE system consists of 3 main modules: i) Institutions — This includes participants' institutional information including their address, contact number, inter-library loan service, NN/LM membership information and routing tables, ii) SERHOLD@ — This module contains information on the journal holdings, iii) Requests — It contains information related to the functions of borrow, lend and status/cancel, etc.

In order to create an inter-library loan request, the borrowing library has to select from a menu of 4 options viz. i) Unique Key (PubMed unique key identifier, an NLM identifier; an OCLC number or ISSN), ii) PubMed (User orders directly from PubMed), iii) LocatorPlus (User orders non-MEDLINE titles using NLM's online catalogue), iv) Manual (If a user has searched and cannot locate a title in PubMed or LocatorPlus, s/he may manually enter the bibliographic data to request an item).

All requests are automatically sent to the library which owns the material, except manual requests of the user, which are sent to the user defined list of libraries. Lender libraries keep status of their requests daily at their workstations. The lender library updates the record of the requests so that the borrower is informed about the status of his/her request. The system also gives warning to the lender library if requests are either pending or not acted upon. DOCLINE user can also check the status of their requests on the system. Each DOCLINE member library receives quarterly summary reports on its activity as a lender or as a borrower. These reports are available online.

Electronic Fund Transfer System (EFTS) is a online billing system used by medical libraries in the U.S. and Canada. Participant libraries create an account with the University of Connecticut Health Centre. Billing data for DOCLINE or other transactions is uploaded by the lender libraries and their accounts are credited and borrowers' accounts are debited accordingly. This online billing system has virtually eliminated the need to create invoice and write cheques for reimbursement for ILL and document delivery between participants. Monthly transaction reports are generated by EFTS.

National Library of Medicine's general and historical collections are available through ILL to any library. NLM provides copies of journal articles, books, audio-visuals and microforms on loan. NLM's ILL services are available only to the libraries and not to the individuals. Members of National Network of Libraries of Medicine (NN/LM) send their ILL requests via DOCLINE.

DOCLINE is a preferred method of receiving the requests for ILL or document delivery. Non-DOCLINE requests are accepted on ALA and IFLA preprinted ILL forms. Most requests received at NLM are processed within a day. The loan period for original material, microforms and audio-visuals is one month. NLM delivers photocopied material e.g. journal articles by Ariel, Fax, e-mail, Web and U.S. Mail. Original materials are delivered by Courier service.

(http://www.nlm.nih.gov/docline/)

Loansome Doc Ordering System enables PubMed and NLM Gateway users to order documents found in MEDLINE. The service is available to the users worldwide. Articles can be ordered from a list of citations retrieved from PubMed and NLM Gateway by sending a request to a medical library for full-text.

(http://www.nlm.nih.gov/loansomedoc/loansome_home.html)

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

2) What is DOCLINE system of National Library of Medicine, USA?

....

....

....

....

....

9.2.4 Document Delivery Service of National Library of Australia

The National Library of Australia (NLA) is playing a very important role in providing ILL and DDS in Australia. NLA provides inter-library loan and document delivery services from its own comprehensive collection and also gives access to the collections of other libraries in Australia and around the world. Supply 1 service of NLA is a main service for obtaining copies of reports, conference papers and journal articles. This service is based on the resources of libraries and commercial document suppliers of the world in order to locate and procure the requested documents. Apart from the traditional role of being a net supplier of materials from its own collection, the NLM also provides infrastructure and policy support through the Libraries Australia Document Delivery (LADD) service for the ILL and document delivery community. In 1981, the Australian Bibliographic Network (ABN) was established to share cataloguing data and document location information among Australian libraries. At present, the Libraries Australia Service (formerly known as ABN and Kinetica) has over 1,000 member libraries, and records the location of 42 million items held in most of the Australian academic, research, national, state, public and special libraries. In 1989, The National Library implemented Australian Bibliographic Network's inter-lending module, which significantly systematised/modernised the document supply service. The NLM uses Ariel software to transmit documents electronically.

In 2005, the NLM implemented Relias Inter-library Loan Management System. By 2007 Relias handled more than 80% of the ILL requests. Relias was basically established to accept ISO ILL requests from Libraries Australia Document Delivery (LADD) and OCLC, as well as requests from individuals. The system is able to check the catalogue and distribute the requests to the National Library of Australia. Relias is used to scan and deliver the material electronically.

The National Library of Australia is actively participating in international ILL/document delivery activities. The National Library is one of the members of the OCLC inter-lending service i.e. "SHARES", which is an agent for National Library of Medicine's "Loansome Doc Service" in Australia and the Asian-Pacific region.

At present, the Libraries Australia Document Delivery (LADD) service is based on the OCLC Virtual Document eXchange (VDX) software. This software

facilitates ILL/document delivery activities between LADD and other systems used in Australia and in the world. It is used by more than 700 libraries in Australia to exchange ILL requests and about 300 New Zealand libraries are able to exchange such requests with Australian libraries through the "Te Puna Inter loan service". The LADD service supports access from Australian libraries, using their own ISO ILL protocol compliant inter-library loan management system and it also provides access to Infotrieve,Inc. and CISTI. For members of LADD it is also possible to exchange documents via the DocStore function in the system. Fig 9.1 shows this environment schematically. During 2007-2008, the LADD service had about 730 subscribers and it handled approximately 320,000 requests. (http://www.nla.gov.au/dss)

National Library ILL system and Libraries Australia Document Delivery (LADD)
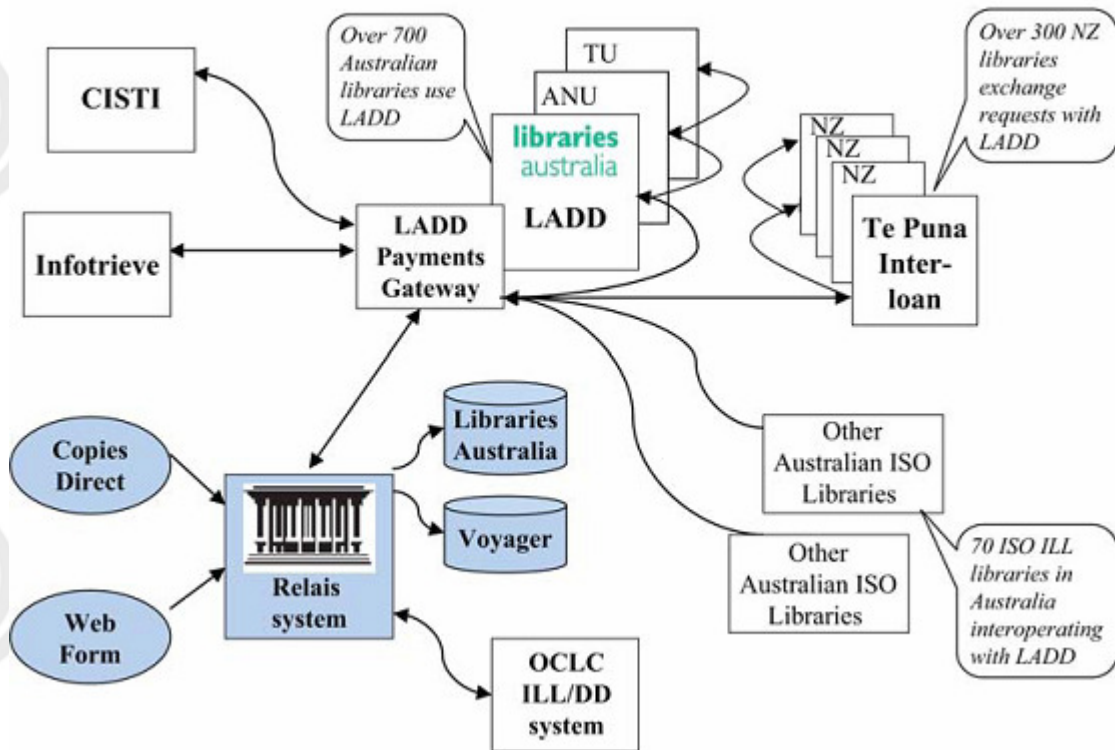
Fig.9.1 Australian ILL/DD Environment
The National Library of Australia's Document Supply Service
(**Source:** Margarita Moreno and Anne XU)

Copies Direct Service of the National Library was introduced in 2001. It is a web-based service available to overseas users also. Due to the emergence of such a service, all the copy requesting services of the library were brought under one single platform. Copies Direct Service of the National Library of Australia is a fast and economical service to get copies of articles, chapters of books, photographs, pictures, maps, manuscripts, music and sound recordings from its online library catalogue. A copy of the item requested by a user can be delivered in three ways: i) the copy is scanned and posted to NLA website in PDF format and the user is informed via e-mail with a link and password to the website to allow her/him to pick up the copy; ii) the copy can be printed and sent by post to the user; iii) the copy can be picked up by the requester from NLA personally.

(http://www.nla.gov.au/copiesdirect)

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

3) What is Copies Direct Service of National Library of Australia?

....

....

....

....

....

9.2.5 Document Delivery Service from E-Journal Service Providers

As you are aware, most of the scholarly journals are now available in print as well in electronic form. Publishers of scholarly journals are now offering online access to full-text e-journals to the subscribers of their print publications. For non-subscribers or individuals, they offer services like pay-per-view. This service enables the libraries and individuals to purchase or have immediate access to full-text of an article or research data without subscribing to the periodical or other source in which it was published. Now, producers of bibliographic databases are collaborating with publishers of primary periodicals and have started providing links from citations to full-text articles from publisher' websites. New generation of e-journal service providers are emerging like aggregators. Aggregators like EBSCO, PROQUEST, Infotrieve Inc., with license rights from primary journal publishers are providing online access to full-text aggregated databases. They provide links from secondary services to the full-text articles online. In this section you will study about electronic document delivery service from some of these e-journal service providers.

i) E-journal Publishers

Publishers like Springer, Elsevier and Emerald provide online access to their publications like full-text e-journals, e-books and e-reference collections to their subscribers. Most of these publishers offer free access to table-of-contents, abstracts and references of articles of their e-journals. Subscribers can search and download full-text articles on their desktops, while non-subscribers can download the article or chapters from books on pay-per-view basis.

SpringerLink is an online information service from Springer Science+ Business Media Group for scientific, technical and medical journals (over 2000), book series (1,108), e-books (over 1,20,000) and more than 7000 new e books reference works (193) on a single integrated platform. SprigerLink offers free access to search table-of-contents and abstracts of e-journals. Libraries have full-text access to articles via institutional subscription. Authorised users are allowed to send e-journal articles only in print format via post or fax to fulfil ILL requests from academic, research or other non-commercial libraries. They are not allowed to send articles in electronic format for ILL purposes.

Springer through INDEST-AICTE Consortium offers more than 1495 journals across 11 disciplines which includes behavioural science, biomedical and life sciences, business and economics, chemistry and materials science, computer science, earth and environmental science, engineering, humanities, social sciences and law, mathematics, medicine and physics and astronomy. In addition to that it provides access to 14 Indian journals to the subscribed members. There is no limit for concurrent users or number of downloads. Access to back files of the last 13 years of these journals is also provided free of cost. Access of journals includes tables-of-contents, abstracts and full-text of articles.

(http://www.sringerlink.com)

Emerald publisher offers online access to over 229 e-journals and over 2000 books and book series volumes on a single integrated platform. The subjects include business, management, library and information science, education and materials science. Apart from individual institution's subscription option, Emerald also offers consortia purchasing options. The option of institution wide license offers unrestricted, concurrent multi user access on campus and remote access. Through consortia purchasing option, each user has access to electronic titles on Emerald full-text databases, which gives smaller libraries access to otherwise unavailable material. Back files of journals (from 1994) are also available. Current Emerald consortia agreement with India is with INDEST-AICTE Consortium.

Pay-per-view options are available on all e-journals, e-book chapters and e-book series. Emerald licenses content to a wide range of information providers including aggregators, A/I services, document delivery services, resellers, web portals, gateways and technology companies. Copyright Clearance Centre's Right Link Online System now delivers Emerald permission service.

(http://www.emeraldinsight.com)

9.2.6 Document Delivery Service from Database Producers

Before March 2011 Chemical Abstracts Service (CAS) had a provision to provide photocopies for non-copyrighted publications, publications registered with Copyright Clearance Centre and American Chemical Society publications. CAS DDS did not provide translations (copies were provided in original language), multiple copies of single document (for multiple copies each copy was to be requested separately) and entire publication such as single authored monograph or entire conference proceedings. One could place orders online or through mail.

Document Detective Service (DDS) of Chemical Abstracts Service (CAS) was discontinued since March 2011 and replaced by FIZ AutoDoc, the default document provider. FIZ AutoDoc provides print copies of journal articles, patents, conference proceedings, technical reports and edited monographic collections.

9.2.7 Document Delivery Service from Aggregators

Aggregators provide online access to digital full-text periodicals published by different publishers on a single platform and customise information for the individual library, based on the need of each library. Some examples of such journal aggregators are EBSCO, ProQuest, Thompson Gale and Infotrieve Inc.

EBSCO through EBSCOhost offers more than 375 full-text and secondary research databases and more than 300,000 e books and audio books. EBSCO

A to Z@ title service provides links and coverage information to more than 1,115,000 unique titles from over 5400 databases and e-journal packages. All major database vendors and publishers are represented. EBSCO provides links to major document delivery systems like Infotrieve, Inc., CISTI and the British Library.

(http:www.ebscohost.com)

Infotrieve, Inc.

Infotrieve, Inc. is a leading electronic document delivery service provider to organisations all over the world. Infotrieve makes electronic delivery methods available to individuals, corporate and institutional customers. The Infotrieve online processing and fulfillment technologies provide easy access to copyright compliant delivery of e-journals, magazine articles, conference papers, case studies and book chapters. It has a proprietary reference database of over 60 million citations aggregated from partnerships with libraries and publishers around the world, including the NRC-CISTI Canadian National Science Library collection and STM (Science, Technology and Medicine) Library of Infotrieve. Infotrieve delivers approximately 1 million documents yearly and out of which 70% of documents are delivered electronically. Infotrieve provides secure, easy-to- use gateways, to corporate's e-resources and pay-per-view STM content. The company provides 24/7 cloud-based access to make content available on user's desktop, laptop or on an iPad. (http://www.infotrieve.com/document-delivery/)

Ariel Inter-library Loan Software: Ariel is an Internet document transmission system. It is owned and supported by Infotrieve, Inc. This software is used by over 9400 institutions around the world for electronic document delivery purposes. Users of Ariel software can scan, store, transmit and print material. Ariel software can scan an article in a paper journal and the image can be transmitted on the Internet to other Ariel workstations anywhere in the world via FTP or e-mail. The scam image then can be converted in PDF for easy delivery to the customer. Ariel allows the institutions to receive TIFF file and convert it to PDF to e-mail to the requesting patron. Some of the other features of Ariel include: i) ability to scan and send grayscale and colour; ii) print variable resolution images on plain paper up to 600 DPI; and iii) scan and print on letter, legal, journal, A3 or A4 paper size. Ariel works on a wide range of printers which are Ariel compatible and it is a better printing option than Fax in terms of speed, quality, reliability and cost.

9.2.8 Access to E-Journals through Library Consortia

Scholarly e-journals have many added features when compared to their print counterparts. They offer many advantages to libraries and end-users. E-journals have the following advantages: i) they allow remote access; ii) same issues of the journal can be used simultaneously by many users; iii) they provide anywhere, anytime (24x7x365) access to periodicals, iv) have built in searching facilities and multimedia capabilities. As a result, libraries are witnessing increasing demands from the scholarly community to provide access to e-journals. At the same time, escalating cost of the scholarly journals and shrinking library budgets are making it difficult for the libraries to meet this demand individually. Hence, many libraries are joining to form a consortium for subscription to e-journals. Consortia offer several benefits to the libraries, such as: i) access to otherwise

unsubscribed material; ii) reduced storage cost; iii) developing common resource databases; iv) better scope for developing a union catalogue among participating libraries; v) getting heavy discounts through joint pricing negotiations-hence lower per unit cost of information; vi) availability and monitoring usage statistics; and vii) effective document delivery system.

Consortium based library subscription to e-journals and electronic full-text databases are picking up good momentum in India as well. At present there are more than 10 national level consortia operating in India. Some examples are INDEST-AICTE Consortium (http://www.indest.iitd.ac.in), UGC-INFONET Digital Library Consortium (http://www.inflibnet.ac.in/econ/), CSIR DST e-Journal Consortium (now known as NKRC), etc.

(See Unit no 9 of Course BLI-221 for more information on consortia).

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

4)   Describe briefly Ariel Inter-library Loan Software.

....

....

....

....

....

9.3   PROBLEMS FACED BY DDS OPERATORS AND THE ROLE OF INTERNATIONAL ORGANISATIONS

Copyright issues, inter-library loan (ILL) at national and international level, incompatibility of ILL protocols for electronic document delivery and restrictions imposed on the storage and delivery of documents electronically by publishers are some of the problems faced by DDS operators.

International Convention on Copyright (Bern 1886) and Universal Convention of Copyright (Geneva 1952), of which India is also a signatory, acknowledge the exclusive rights of authors or publishers over their literary work, but at the same time, also permit to make single copy of the document for research and educational purposes for the benefits of the users. However, copyright laws in relation to electronic material are ambiguous and are continuously changing. To prevent unauthorised use and exploitation of electronic material, most of the publishers are selling their e-publications under license agreement. The license agreements have rigid clauses which impose a number of restrictions on the libraries on the use of e-publications. These problems are being discussed at international forums and many international agencies are involved in finding solutions to these problems.

9.3.1 IFLA Committee on Copyright and Other Legal Matters

The Committee represents the voice of the international library community in copyright and intellectual property concerns. The Committee is active in the issues relating to: i) Disputed claims of ownership of library material; ii) Economics of trade barriers to the acquisition and use of library resources and effective library services; iii) Subscription and license agreements; and iv) Wide range of other legal matters of international significance to libraries and librarianship.

IFLA Document Delivery and Resource Sharing Section: Formerly known as Document Delivery and Inter-lending Section, IFLA Document Delivery and Resource Sharing Section was founded with the objective to improve as well as extend document delivery and also inter-library lending on national and international level with the use of emerging technologies and to increase cooperation among libraries and document suppliers. It is a forum in IFLA for libraries and associations concerned with making information available throughout the world through a variety of resource sharing and document supply techniques. The Section monitors developments in the area of document delivery and resource sharing and gives information to its members through its website. IFLA Document Delivery and Resource Centre also publishes a twice-yearly newsletter, and organises programmes at IFLA Conferences, document delivery workshops and cooperative projects with international organisations.

(http://www.ifla.org/en/docdel)

IFLA Voucher Scheme: This scheme was started by IFLA in 1995. Under this scheme IFLA gives plastic vouchers of Euro for inter-library loan transactions. Libraries purchase these vouchers from IFLA HQ and use them for paying inter-library loans and for photocopies of material. These vouchers can be re-used for number of times by the members. Libraries that supply more items can redeem their excess vouchers by sending them to IFLA HQ. This voucher scheme does away with all financial payments for example, payment for international borrowing and document supply. The advantages of this scheme include: i)"No bank charges for either requesting or supplying library; ii) No money lost in international exchange rate; iii) No need for invoices, therefore reduced administrative costs; iv) The vouchers can be retained for future use; and v) Libraries are encouraged to offer an effective ILL service in order to earn vouchers, which they can use or redeem".

(http://www.ifla.org/voucher-scheme)

9.3.2 ISO ILL: The Standard (ISO:10160:1997-)

ISO-10160-the Inter-library Loan Application Service Definition is an ISO standard. It defines the terminology normally used for inter-library loan transactions between various document exchange systems. This standard provides technical definition of messages as well as a set of rules on using these messages between the systems. Many libraries which are using multiple ILL methods, are implementing ISO ILL compliant systems, because this enables the libraries to manage all their ILL transactions in a single database. (http://www.iso.org)

9.3.3 Counter

Project COUNTER (**C**ounting **O**nline **U**sage of **N**etworked **E**lectronic **R**esources) is an international initiative for developing global standards for measuring online usage of electronic resources. It was launched in March 2002. COUNTER is serving libraries, publishers and intermediaries by setting standards that facilitate the recording and reporting of online usage statistics of e resources in a consistent, credible and compatible way. The Working Group of the Project, includes many key industry players. It is currently working on an internationally agreed Code of Practice which paved the way for significant improvements in the consistency and accuracy of usage data of e resources. The first Code of Practice, which covers online journals and databases, was published in 2003. With the launch of Code of Practice for online books and reference works in 2006 its coverage was extended. Release 3 of the Code of Practice for journals and databases was published in August 2008 and Release 4 of the COUNTER Code of Practice for e-Resources was published in April 2012. All these releases of the code of practice are available on its website.

(http://www.projectcounter.org/)

9.3.4 International Coalition of Library Consortia (ICOLC)

ICOLC was established in 1996. It is an informal group of more than 200 library consortia around the world. For example from India, UGC INFONET Digital Library Consortium and INDEST-AICTE consortium are members of this coalition. ICOLC holds and supports discussions among library consortia on the issues of common interests. It conducts meetings every year in order to inform the participating consortia about the new electronic information resources and pricing practices of electronic publishers/ vendors and other issues of importance to Coalition Directors and Governing Boards. The Coalition also meets and discuss with the information providers, publishers and vendors about the products and issues of mutual concerns. ICOLC issues statements from time to time on the topics which affect the libraries and consortia. All these statements issued by the Coalition are available on its website.

(http://www.libray.yale.edu/consortia/)

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

5) What are the advantages of IFLA Voucher Scheme?

....

....

....

....

....

....

....

9.4 ELECTRONIC DOCUMENT DELIVERY SERVICE: EMERGING TRENDS

The emergence of electronic document delivery systems have improved the efficiency of the service, but at the same time brought in many more competitors in the document delivery service market. Users have the option to avail of the services of publishers, e-journal service providers, database producers and aggregators to search and have instant access to the documents/information they need.

Two contradictory trends in document supply/delivery are being observed. First, libraries have options to purchase information in smaller units, like journal article or part of book, rather than subscribing to a journal or purchasing a book. This information can be obtained via document delivery, inter-library loan or pay-per-view download. Secondly, libraries are becoming part of library consortia for website licensing of electronic scholarly publications (like INDEST-AICTE Consortium), which is making an increasing amount of content available to the individual library, at consortial discount. This has resulted in less demand, particularly for journal articles. National document delivery centres like BLDSC in UK, CISTI in Canada and INIST in France are witnessing decline in requests for document supply. For instance, BLDSC supplied over 3.8 million items in 2001, but during the last many years the demand has fallen by more than 50% to 1.6 million items. The British Library is entering into partnership with publishers, web search engines and database producers to generate more revenue. Service such as 'British Library Direct Plus' is an example of such partnership. This service is a subscription-based service and allows searching the three databases viz. the British Library ETOC (Electronic Table of Contents), Google Scholar and Pubmed Databases simultaneously. The British Library is also digitising back runs of periodicals for various publishers. Recently NRC- CISTI has withdrawn from document supply business and has awarded the contract to Infotrieve, Inc. to take over its customer base. INIST has also introduced 'Refdoc' a new service for ordering scientific and technical documents from INIST. All these new services offer online searching facility and delivery of documents electronically. Though the requests for journal articles have decreased, the ILL requests for books (returnable) have witnessed considerable increase. Many libraries are even purchasing books in response to ILL requests.

9.5 SUMMARY

Document delivery service is one of the important services of the library and information centres. The emergence of electronic document delivery systems (EDDS) has improved the efficiency of this service. In this Unit, we have discussed:

- Important EDDS operating in the world, such as ILL service of OCLC, DOCLINE System of National Library of Medicine, USA and document delivery service of National Library of Australia;

- Document delivery service from database producers, e-journal publishers and aggregators;

- Access to e-journals through library consortia;

- Problems associated with electronic document delivery service;

- Role of international organisations in addressing these problems; and

- The emerging trends in electronic document delivery service.

9.6 ANSWERS TO SELF CHECK EXERCISES

1) Systems employing electronic technology for receipt of request and supply of documents are known as Electronic Document Delivery Systems (EDDS). An EDDS system provides immediate access to the needed information. In such systems, the request may be received by telephone, e-mail, Fax or online ordering. The document is sent electronically via e-mail, fax, or other document delivery software like Ariel.

2) DOCLINE is an automated inter-library loan (ILL) request, routing order and referral system of National Library of Medicine used by over 3200 medical libraries from the U.S., Canada and Mexico. The purpose of the system is to provide efficient document delivery service among libraries in National Network of Libraries of Medicine (NN/LM). The system provides efficient document delivery service by linking the holdings of member libraries and routing the ILL quickly throughout the network. Requests can be created, edited, routed and filled in this system. DOCLINE participants can also check the status of their requests. DOCLINE is available for use 24 hours a day, seven days a week for use. There are no charges for participating in DOCLINE. Inter-library loan charges vary from institution to institution. If a request is received and not acted upon within three working days, DOCLINE automatically routes the request to another potential lender. The request is only routed to institutions that are members of Electronic Fund Transfer System (EFTS). EFTS is a billing system used by medical libraries in the U.S. and Canada.

3) "Copies Direct Service" of the National Library of Australia is a fast and inexpensive service to get copies of articles, chapters of books, photographs, pictures, maps, manuscripts, music and sound recordings from its online library catalogue. The copy of the item requested by a user can be delivered in three ways viz. i) the copy is scanned and posted to NLA website in PDF format and the user is informed via e-mail with a link and password to the website to allow her/him to pick up the copy; ii) the copy can be printed and sent by post ii) or it can be picked up by the requester from NLA.

4) Ariel is an Internet document transmission system. It is owned and supported by Infotrieve, Inc. This software is used by over 9400 institutions around the world for electronic document delivery purposes. Users of Ariel software can scan, store, transmit and print material. Ariel software can scan an article in a paper journal and the image can be transmitted on the Internet to other Ariel workstations anywhere in the world via FTP or e-mail. The scam image then can be converted in PDF for easy delivery to the customer. Ariel allows the institutions to receive TIFF file and convert it to PDF to e-mail to the requesting patron. Some of the other features of Ariel include: i) ability to scan and send grayscale and colour; ii) print variable resolution images on plain paper up to 600 DPI; and iii) scan and print on letter, legal, journal, A3 or A4 paper size. Ariel works on a wide range of printers are Ariel compatible and it is a better printing option than Fax in terms of speed, quality, reliability and cost.

5) Under IFLA Voucher Scheme IFLA issues plastic vouchers to be used for inter-library loan transactions. Libraries purchase these vouchers from IFLA HQ and use them for paying inter-library loans and for photocopies of material. Vouchers have unlimited validity and can be re-used for number of times. Libraries that supply more items can redeem their excess vouchers by sending them to IFLA HQ. They get refund also. This scheme eliminates all financial payments when paying for international borrowing and document supply. The benefits of this scheme include: i) "No bank charges for either requesting or supplying library; ii) No money lost in international exchange rate; iii) No need for invoices, therefore reduced administrative costs; iv) The vouchers can be retained for future use; and v) Libraries are encouraged to offer an effective ILL service in order to earn vouchers, which they can use or redeem."

9.7   KEYWORDS

Cloud Computing	:	This type of computing is based on sharing of computing resources rather than having local servers or personal devices to handle applications.
Cloud-based Access	:	Access to computing resources based on cloud computing.
Consortial Discount	:	A reduction in the annual subscription price of an electronic information resource for libraries that subscribe as a group, often calculated on a sliding scale, with the percentage of discount proportional to the number of libraries in the consortium and eligibility determined by a fixed number.
Consortial License	:	A licensing agreement for an electronic information resource in which the licensee is a group of libraries, instead of a single library.
Library Consortium	:	A formal association of libraries which is established to develop and implement resource sharing among the members.
DIALOG	:	A vendor that provides pre-search access to a wide selection of online databases via proprietary software. Established in 1972, DIALOG led the market for many years in online information retrieval. Now owned by Thompson, the company also provides technical support for Internet users and e-commerce.
DPI	:	**D**ots **P**er **I**nch- In computing a measure of image quality resolution in display and printing.
FTP	:	**F**ile **T**ransfer **P**rotocol, the TCP/IP protocol that allows data files to be copied directly from one computer to another over the Internet regardless of the platform, without having to attach them as in e-mail.

Google Scholar	:	A free service launched by Google in November 2004 that allows users to search the Internet for scholarly literature across many disciplines using the company's proprietary software.
PDF	:	**P**ortable **D**ocument **F**ormat- the format used for page description in the Adobe Acrobat Document Exchange Program. In Acrobat, the PDF writer converts most DOS, Windows, UNIX and Macintosh data files into PDF format. With Adobe reader installed at the receiving end, PDF file can be displayed and printed in original format.
TIFF	:	**T**agged **I**mage **F**ile **F**ormat- a widely supported data format developed by Aldus and Microsoft for storing black and white, gray scale or colour bitmapped images. The file usually has the extension .tiff or .tif added to the file name.

9.8 REFERENCES AND FURTHER READING

Braid, Andrew. "Electronic Document Delivery: Vision and Reality". *Libri* 44.3(1994): 224-236. Print.

Dictionary.com's 21st Century Lexicon.

McGrath, Mike. "Interlending and Document Supply: A Review of the Recent Literature: 70". *Interlending and Document Supply* 38.2 (2010).126-133. Print.

Moorthy, Lakshamana A. "Electronic Document Delivery Systems". *New Vistas in Library and Information Science*. Ed. Narasimha Raju GVSL, et al. New Delhi: Vikas Publishers, 1995. 406-22. Print.

Moreno, Margarita, and Anne Xu. "The National Library of Australia's Document Supply Service". *Interlending and Document Supply* 38.1(2010): 4-11. Print.

Mueller, Harold. "The Legal Problems of Document Supply by Libraries: An International Perspective". *Interlending and Document Supply* 36.2(2008): 68-73. Print.

Patterson, Avril. "Linchpin or Weakest Link? Challenges to Current Document Delivery Practice and Services". *Interlending and Document Supply* 36.4(2008): 191-195. Print.

Pfleger, Mat. "The British Library: The Changing Face of Document Supply". *Interlending and Document Supply* 36.3(2008): 132-134. Print.

Sreekumar, M.G., and T.Sunitha. *Library Capacity Building through E-journal Consortia: The Indian Scenario*. Web.<http://dspace.iimk.ac.in/bitstream/2259/249/1/09-mgs-sunitha-paper%2Bnew.pdf>.

Websites

<http://www.libray.yale.edu/consortia/>

<http://www.oclc.org>

<http://www.oclc.org/illiad/>

<http://www.nlm.nih.gov/docline/>   <http://www.nlm.nih.gov/loansomedoc/
loansome_home.html>

<http://www.nla.gov.au/dss>

<http://www.nla.gov.au/copiesdirect>

<http://www.sringerlink.com>

<http://www.emeraldinsight.com) (http:www.ebscohost.com>

<http://www.indest.iitd.ac.in>

<http://www.inflibnet.ac.in/econ/>

<http://www.ifla.org/en/docdel>

<http://www.infotrieve.com/document-delivery/>

<http://www.iso.org>

<http://www.projectcounter.org/>

<http://www.libray.yale.edu/consortia/>

UNIT 10   TRANSLATION SERVICE

Structure

10.0   OBJECTIVES

After reading this Unit, you will be able to:

- describe the quantum and importance of S&T literature published in foreign (non-English) languages;

- explain the need and importance of translation service;

- trace the historical development of translation service;

- identify organisations/centres and translation service available to solve foreign language problems;

- define machine translation systems;

- explain the types of the machine translation systems available for automatic translation of published documents as well as electronic texts such as translation of web pages, electronic chat and e-mail; and

- describe the role of library in facilitating translations.

10.1 INTRODUCTION

Progress of science depends on the access to published science and technology (S&T) literature. Published scientific literature serves as a foundation for further research in any area of scientific research. Access to this literature is, therefore, a fundamental right of researchers anywhere in the world. However, this is not true in practice. Over 50% of the scientific literature is published in languages other than English. The English speaking researchers do not have access to this literature unless it is translated in English. This problem was realised more acutely after the World War II, when government sponsored research got stimulus and great momentum. The seven major languages in which bulk of S&T literature published were English, Russian, German, French, Japanese and Chinese. No country, however advanced, could afford to ignore scientific information produced in other countries. So there has been a great demand from researchers for translation of research results published in languages other than English. Many documentation centres and special libraries attached to R&D organisations started providing translation service to their scientists on demand. The demand for translation was particularly more for the journal articles. The major abstracting services cover S&T literature published in languages other than English. These abstracting services provide abstracts in English of the articles published in other languages, so that scientists can judge the relevance of the article and get it translated if required. Similarly, for French and Russian speaking scientists, the major abstracting services in S&T are 'PASCAL' and 'FRANCIS' from INIST-CNRS, France in French language and 'Refratrivnyl Zhurnal' from VINITI, erstwhile Russia in Russian language. When erstwhile USSR launched the world's first space satellite, the U.S. government looked for all sorts of explanations. One reason given for apparent Russian success was that Soviet scientists used the western literature, while western scientists did not use the Russian literature because they could not handle the Russian language. To solve this problem, the National Science Foundation undertook a large scale programme in support of 'cover-to-cover' translation of Russian publications. In India too NISCAIR (Formerly INSDOC) has been providing translation service from many foreign languages in English to the scientists since its inception in 1952.

Translation of the documents is carried out by the translators. For scientific translations, a translator should have a good knowledge of both the languages as well as of the subject to understand the terminology of the given subject. Earlier most of the translation work was done by the human translators. With the advent of computers, research in machine translation (MT) started by 1950s. Machine translation is the application of computers to the task of translating text from one natural language to another. During the last 70 years of research in machine translation has resulted in large number of MT systems for mainframe computer, personal computers and for the Internet.

In this Unit, you will study about translation activities around the world, research and development activities in translation, particularly, in machine translation and bibliographical control of translations carried out by various agencies in the world.

10.2 TRANSLATION PROCESS AND TRANSLATOR

Translation is the process of transferring the information contents of the text in one language (L1) into another language (L2). The former (L1) is called the 'Source Language (SL)' and the latter (L2) is called the 'Target Language (TL)'. In the translation process, the language expert analyses the given text in the source language from various view points including meaning, grammatical structure of the sentence(s), terminology, etc. and comprehends the information contents of the sentence(s). The more accurate the comprehension of the information contents of the sentence(s), the more precise will be its transfer in target language. If the translator fails to understand the message communicated by the source language, the information transferred into target language will either be distorted or inadequate. A translator, therefore, should have sufficient knowledge of the source language as well as of the target language. In addition, s/he should be a subject expert to understand the terminology of the given subject. Each discipline has its own peculiar jargons and terms and a good translator should have in depth knowledge of these terms in both the languages. Thus, subject knowledge is an essential requirement, specifically for translating S&T documents.

10.3 TRANSLATION METHODS

The appropriate method of translating any text depends on the material to be translated. Material in science, technology and social sciences is translated adhering to the contents of the original. This is known as **literal translation**. Literal translation is utilised for factual type of materials such as commercial correspondence, legal materials, technical materials as well as scholarly materials in the pure and applied sciences and social sciences whereas translation of materials in humanities such as novels, plays, poetry, films, television, radio, motion picture scripts and vocal music texts, etc. is **literary translation.** This type of translation differs from science and technology translation as here the style and techniques of expressing feelings are more important. Second difference is the delivery of material in target language. Translation of literary material is destined for mass consumption. On the other hand scientific, technical, legal and commercial materials are intended for the specialists in a given field. The other major difference is that science and technology translations are done once, while literary classics (such as novels, religious books like Bible, Bhagwat Gita, etc.) are repeatedly translated.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of the Unit.

1)   What do you understand by 'Literal Translation' and 'Literary Translation? State the differences between the two.

....

....

....

....

10.4 TRANSLATION SERVICE IN S&T: HISTORICAL PERSPECTIVE

Various disciplines of science and technology (S&T) as well as newer interdisciplinary areas such as environmental studies, medical electronics, biotechnology, etc. are more in numbers than those in humanities and social sciences. Advances in these fields occur much more rapidly and must be reported to the researchers as soon as possible. Major share of research and development (R&D) funding also goes to these knowledge areas. However, great portion of S&T research is carried out in non-English speaking countries. Published literature is the most effective means of exchanging knowledge. Translations are the only solution in providing access to multi-lingual information resources.

The demand for translation service grew after the World War II. Several government departments, public sector organisations and R&D institutions around the world started having in-house translation facilities in order to cater to their own translation requirements. Translation units formed an integral part of documentation and information centre of the organisation. Two kinds of services were organised within the information centre. They are:

i)   In-house translation service to cater to the local translation requirements of the organisation from a few foreign languages into English; and

ii) General translation service which provided translation service to any individual or organisation from large number of foreign languages into English or vice versa on payment basis (e.g. Foreign Language Translation Service of NISCAIR).

10.4.1 Translation Centres

In many countries national translation centres were set up to monitor translation activities in the country. These centres either carried out translation work themselves or acted as referral centres for collecting, processing and announcing the translations done by various agencies in the country. In this section you will study about the activities of some of the major translation centres which came up during 1950s and 1960s around the world.

In the United States, major translation efforts consisted of English language translation of S&T material captured during the World War II, sponsored by National Science Foundation (NSF) and Special Library Association (SLA). During this period a large number of foreign reports were being translated simultaneously by different organisations which resulted in duplication of translation efforts, amounting to waste of time and money. The need was felt to establish a clearing house for translations, where translations could be collected, processed, announced and copies supplied on request. In response to this need, two translation centres viz. **Scientific Translation Center** and **SLA Translation Center (Later named as National Translation Center)** were set up where translations could be deposited.

NSF funded **'Scientific Translation Center'** which covered Russian type scripts and technical reports that were deposited in Library of Congress. This Centre was located in Library of Congress.

National Translation Center was founded in 1953 under the name of **SLA Translation Pool**. This Centre engaged in collecting and processing translations from western European and Oriental languages. The Center was located in John Crerar Library, Chicago.

Space research activities in Soviet Union followed by launching of Sputnik in 1957, rapid technology in Germany and latest advancements in Japan, as well as the intensified research in all countries around the world, resulted in the growth of publications. Almost 50% of the S&T literature was published in languages other than English. Industrial research facilities and government agencies increased their translation activities considerably. Consequently, the number of translations deposited in SLA Translation Pool grew. In 1957, the SLA Translation Pool changed its name to **SLA Translation Center** and expanded its activities to cover not only translations deposited with the centre but also those available from commercial translation agencies and professional societies. SLA Translation Center to fully serve its users, established exchange agreements with national groups and professional societies around the world, by means of which translations were deposited with or reported to the Center. New additions to the Center's collections were announced in the monthly journal, *Translation Register Index*. This journal begun by the Special Library Association (SLA) in 1967 was transferred to **National Translation Center** in 1971. The **SLA Translation Center** became **National Translation Center** and was housed in John Crerar Library, Chicago. In 1989, The National Translation Center became part of the Library of Congress. In 1993, The Library of Congress closed the National Translation Center and holdings of the Center i.e. translations from 1989 to 1993, were transferred to Canada Institute for Scientific and Technical Information in Ottawa, Canada.

Translations held by **'Scientific Translation Center'** were announced by the following indexes:

- *Bibliography of Translations from Russian Scientific and Technical Literature (1953-1956).*

- *Translation Monthly (1955-58)*

- *Technical Translations (1959-1968)*

- *Translation Register Index (1967-86).* This index merged with *World Translation Index* in 1987.

National Translation Center announced its translations by the following indexes:

- *SLA List of Translations (1953-1955)*

- *Translation Monthly (1957-1858)*

- *Translation Register Index (1967-86).* This index merged with *World Translation Index* in 1987.

England also witnessed similar translation activities. All the translations carried out by various agencies in the country were announced by British Library Lending Division, Boston Spa (now BLDSC) by the following publications:

- *NLL Translation Bulletin (1959-70):* This publication covered citations of translations of Russian articles, list of translations of Russian and other books as well as information about cover-to-cover translated journals.

- *British Announcement Bulletin (1971-)* covers complete list of translations done by British agencies.

International Translation Center (ITC) came into existence in 1961 (Formerly known as **European Translation Center**) in Delft, The Netherlands. The present name was adopted in 1975.

Europe too, realised the importance of access to S&T literature published in Asian and western European countries and felt the need for translation of this material. Consequently, large scale translation work was carried out, primarily from non-western languages (covering Russian, Finnish, Hungarian, Romanian, Chinese, Japanese and Arabic), by European nations. The target languages were English, French and German. To prevent duplication of translation effort and to exchange translations, about 20 western European countries in cooperation with OECD and the United States, established **European Translation Center (ETC)** in 1961. The participating countries had national centres which, together with ETC, formed an international translation network. The ETC acted as a referral center, maintained a central information file, distributed translations and announced all translations in the monthly *World Index of Scientific Translations and List of Translations Notified to ETC (1967-77)*. It also maintained lists of translators and translation agencies. In 1975, ETC expanded its activities to announce translations available from other countries also and was renamed as **International Translation Center (ITC)**. The name of the announcement bulletin also changed to *World Transindex* in 1977 (1977 to 1986). From 1987 this publication was renamed as *World Translation Index (1987 to 1997).* International Translation Center published 10 issues of **World Translation Index (WTI)** per year. This index was computerised and produced by PASCAL system developed by CNRS-Paris. Translations were arranged according to COSATI Classification Scheme with source and author indexes and key to the organisations from where translations could be obtained. First issue of WTI provided list of cover-to-cover translated journals. WTI covered citations of cover-to-cover translated journals and ad-hoc translations of periodical articles, patents, standards, books, regulations, etc. International Translation Center did not translate but registered and indexed translations performed by cooperating institutions, firms and individuals who voluntarily deposited copies of the translations with the Center. WTI centralised translation announcements made by participating agencies. INSDOC (now NISCAIR) published *National Index of Translations,* a quarterly publication covering citations to translations done by INSDOC and other agencies in India. National Index of Translations was also sent to ITC for coverage in WTI.

By the end of 1990s, many of the major translation centres in various countries were no longer operational due to reduction in funding for information services. This resulted in significant decline in translations made on ad-hoc basis. ITC had to work hard to locate material for citations in WTI and subscription to WTI also steadily declined. This led to the closure of International Translation Center in December 1997.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of the Unit.

2)   When did International Translation Center close its operation? What were its main activities when it was in operation?

....

....

....

....

....

10.5   TRANSLATION CENTRES AND TRANSLATION SERVICE IN INDIA

In India several Governments and Public Sector Organisations, R&D institutions in S&T have in-house translation facility to meet their own translation requirements for limited number of languages. Some such organisations are BARC, DESIDOC, ONGC, BHEL, MECON and HAL.

10.5.1 NISCAIR Foreign Language Translation Service

NISCAIR (formerly INSDOC) has been providing translation service to S&T community since its inception in 1952. It caters to the translation requirements of National Laboratories, S&T Institutes, R&D Organisations, Corporate and Public Sector Undertakings, Universities, Research Scholars, etc. NISCAIR provides translations of S&T documents from 20 foreign languages into English. The languages include Chinese, Czech, Danish, Dutch, French, German, Hungarian, Italian, Japanese, Norwegian, Polish, Portuguese, Rumanian, Russian, Serbo-Croatian, Spanish, Swedish, etc. NISCAIR provides reverse translation (from English into foreign languages) also. Translation of English text (maximum of one page), into French, Russian and Spanish is undertaken on request. Translation of full English document into Japanese is provided on request. NISCAIR also provides interpretation services in Japanese language. Charges for translation services for different languages are available at NISCAIR website (http://www.niscair.res.in).

The translation work is carried out by experienced staff translators and panel of translators registered with NISCAIR. Since NISCAIR mainly deals with technical translation, most of the staff translators as well as panel of translators have postgraduate qualification in languages as well in subject disciplines. For selection of panel translator, language (target as well as the source language) and subject proficiency of the applicant is examined by giving her/him different types of technical documents for translation. The person is registered on the panel if s/he delivers quality translation, adheres to required time schedule and delivers translation in the required format.

Self Check Exercise

Note: i) Write your answer in the space given below.

    ii) Check your answer with the answers given at the end of the Unit.

3) Describe the translation service of NISCAIR.

....

....

....

....

....

....

10.5.2 Translation Activities in Humanities and Social Sciences in India

No one fully understands the meaning of 'Unity in Diversity' better than people in India. There are twenty–four official languages recognised by Government of India. In addition to that, there are about 2000 dialects that have been recognised in India. Quite a lot of communication is done in English and most state governments function in their own regional languages. This situation demands an urgent need for translation of official documents. Apart from official documents, there is need for translation of text books, scholarly materials, literary materials, etc. In response to this need, a number of organisations in India are actively involved in translation activities in the fields of humanities and social sciences.

Some of them are as follows:

1) The National Council of Educational Research and Training (NCERT) and National Book Trust (NBT) are both engaged in translation of text books in various Indian languages. (http://www.ncert.nic.in/)

2) State Council of Educational Research and Training (SCERT) carries out translation work from English to regional languages and from regional languages to English. (http://www.edudel.nic.in/scert.html/)

3) Sahitya Akademi was established in 1954. It is a central institution for publications and promotion of literary activities in 24 Indian languages including English. The Akademi gives 24 annual awards to literary works in Indian languages. The Akademi has established four Centres for Translations in Bangalore, Ahemadabad, Kolkata and Delhi. In addition to this, it has an archive of Indian literature in Delhi. The Akademi also organises Target Language Literary Translation Workshops. One of the main highlights of the workshop is that the practicing translators work on a literary piece under the direction of the experts. The Akademi has organised such workshops in many Indian regional languages.

(http://www/sahitya-akademi.gov.in/)

4) Central Institute of English and Foreign Languages (CIEFL) was set up in 1958. It has been renamed as English and Foreign Languages University

(EFLU) in 2007. It has three campuses. The main campus is in Hyderabad. Its main objective is to bring about qualitative change in the standard of English teaching in India. To achieve this, it has devised various programmes in the areas of research, development and training. The university presently, conducts training courses in foreign languages including German, French, Russian, Arabic, Spanish and Japanese. The institute also carries out translation work.

(http://www.hyderabadeducation.net/university)

5) Institute of Asian Studies, Chennai was set up in 1982 with the objective of strengthening the cultural ties between India and other countries of Asia. The Institute is involved in research, training, translation and publication activities in Asian languages. The Institute has eight research departments which have made significant scholarly contribution in their respective fields of studies. The Institute's activities include the following: studies and research in Tamil, Kannada, Japanese, Telugu and also Buddhism as well as related translation and publication activities. In addition, the Institute is carrying out research in Manuscriptology and Folklore studies and translation activities related to these areas. The Institute is working on the following projects in translation field:

   i)   Tamil-Tamil-English Dictionary in 20 volumes.

   ii)   English –Tamil Dictionary in 20 volumes.

   iii) Encyclopaedia of the Folklore Culture of Tamil Nadu (English)

   iv)   Encyclopaedia of the Folklore Culture of Karnataka (English)

   v)   A Multilingual Dictionary: Kannada-Kannada- English-Tamil-Japanese. The dictionary has Kannada as a source language.

   vi)   Department of Manuscriptology is translating palm-leaf manuscripts into English.

   vii) A translation project for translation of 12 holy books of Tamil Nadu into English and Hindi is in progress.

   viii) History of Buddhism in South India in 4 volumes (English)

   ix)   Tamil Lexicography: Tamil text database has been developed. Computers are used to extract words and citations from the text. Historical development of the meaning of the words can also be traced. To support this work many existing Tamil dictionaries have been combined into one single database for a number of mono and bilingual Tamil dictionaries. (http://www.xlweb.com/heritage/asian/)

6) Indian Council for Cultural Relations (ICCR), an autonomous organisation of Government of India, is involved in India's external cultural relations through cultural exchange with other countries and people. The Council's headquarters are located in Delhi with regional offices in Bangalore, Chandigarh, Chennai, Cuttack, Guwahati, Hyderabad, Jaipur, Lucknow, Mumbai, Pune, Shillong, Thiruvanthapuram and Varanasi. The Council carries out literary translations of books and other documents to project Indian cultural heritage to the world. The Council's translation and publication activities focus on books relating to Indian culture, philosophy, mythology

as well as traditional music, dance and theatre. The Council has translated many Sanskrit classics to number of foreign languages including French, Spanish, Arabic, Russian and English. (http://www.iccrindia.net/)

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of the Unit.

4)   Enumerate the institutions involved in translation activities in humanities and social sciences in India.

    ....

    ....

    ....

    ....

    ....

    ....

10.6 TRANSLATION SERVICE: PRESENT SCENARIO

At present most of the National Translation Centres which came up in various countries of the world are no longer functioning. International Translation Center also closed its operations in 1997. Some of the translations listed in various indexes produced by these translation centres are available at document supply centres such as BLDSC and CISTI.

World Translation Index database (online database of print publication of *World Translation Index*) is available for online searching through a vendor, DIALOG. (Dialog file 295. Period covered is 1979-1997). The database contains bibliographical references to both original and translated documents, reflecting translation announcements collected by International Translation Center. More than half of English translations are from documents originally published in Russian and almost 30% are from Japanese and German originals.

Index Translationum (1932+): Published by UNESCO, Index Translationum is an international bibliography of translations. It provides bibliographical details of books translated in the world into English covering all fields of knowledge. Each year, about 100 UNESCO Member States, send bibliographical details of books translated in their countries to the UNESCO Secretariat. UNESCO annually brings out Index Translationum in print. The Index Translationum was created in 1932. From 1979 onwards, UNESCO is maintaining a machine readable database of this index. This database has cumulative bibliographical information on the books which are translated and published in the Member States of UNESCO. The database has over 2,000,000 records. It is planned to update the database every four months. (http://www.portal.unesco.org/culture/en/...)

In India, NISCAIR continues to provide translation service as described in Section 10.5.1.

At present a large number of private translation agencies have come up in the world who offer translation as well interpretation services to advertising industry, media industry and publication industry. In addition, they also offer services to medical, educational and research institutes. The translation service of these private agencies cover administrative translation (translation of circulars, notices, etc.); commercial translation (translation of contractually binding documents); financial translation (translation of contracts, accounting documents, agreements, etc.); legal translation (translation of summons, complaints and other legal documents), literary translation (translation of literary text from one language to another language); technical translation (translation of technical documents related to research and specialised fields in S&T); clinical research translation (translation services for pharmaceutical companies), etc.

A number of such private translation agencies are listed on the Internet. For instance, Translation Directory.com (http://www.translationdirectory.com) on the Internet is a portal for language professionals and their clients. The portal provides details of over 7204 translation agencies and over 28714 free lance translators from 68 countries. The translation agencies are listed country wise. The agency details include agency name, contact person, e-mail address, URL, phone number, fax, postal address, language profile, etc. The details of free lance translators include resume of the translator, language proficiency and subject expertise. The portal lists over 558 translation agencies from India.

At present most of the government organisations in the world are funding mainly research projects in machine translation. In subsequent sections of this Unit you will study about machine translation activities in India and abroad.

10.7 MACHINE TRANSLATION

Machine Translation (MT) is application of computers to the task of translating text from one language to another. In MT system, the computer program analyses the text in one language - the "source language" and then produces the equivalent text in another language - the "target language", without human intervention. Machine translation is also referred to as "automatic translation". The systems for automatic translations have been under development for over 60 years. The first public demonstration of MT system was held in New York at the head office of IBM in 1954. This MT system translated 49 selected Russian sentences into English in the field of chemistry. This demonstration stimulated the funding of MT research not only in the U.S. but also worldwide.

Currently, the state of machine translation is such that it involves some human intervention at pre-editing or post-editing phase. This means the translation produced by MT systems must be revised or "post-edited" by human translators to achieve publishable quality. Sometimes, such revision may be substantial as MT system produces only 'draft' translation. In other words, machine translation is not perfect and as results will never be able to compete with human translator. However, in the fields with limited range of vocabulary and simple sentences, MT systems are producing good results. For instance, TAUM, a Canadian MT system, translates weather reports from English to French without any human intervention.

Earlier the MT systems were based on "direct" translation via bilingual dictionaries with very little analysis of syntactical structure of a language. By

1980s, advances in computational linguistics offered better facilities for machine translation. Rule-based method could be used to carry out machine translation. In these systems, the text of the source language is analysed into abstract representation of 'meaning' of the text involving number of programmes to identify word structure (morphology), sentence structure (syntax), recognise correct semantic relationship and distinguish between homonyms, phrases and other ambiguities. Syntactical analysis of a language involves identifying use or function of a word, phrase or clause in a sentence. For example, English word such as 'light', which can be a noun, adjective or verb; or 'solution' which can be a mathematical term or a chemical term; or 'plant' which can be a botanical term or industrial term. In other words, MT systems have adopted more a sophisticated approach to the task of translation. At present, most of the MT systems can be grouped into 3 basic system type:

i) Direct,

ii) Transfer, and

iii) Interlingua.

Direct Translation: The MT systems using only bilingual dictionaries. The best known MT systems for mainframe computers are of 'direct translation type' e.g. SYSTRAN, LOGOS, FUJITSU ATLAS Systems. They are, however, improved version of this type. They are highly modular in construction and easily modifiable and extendable. SYSTRAN system, originally designed for Russian to English, is now available for 52 language combinations. LOGOS originally marketed for German to English is also now available for other languages, such as English to German, Italian and Spanish and from German to French and Italian. FUJITSU ATLAS System translates from English to Japanese and from Japanese to English.

Transfer Approach: In this approach there are three basic stages: i) analysis of input text into abstract source representation, ii) transfer to the abstract target representation, and iii) generation into output language. Transfer model is shown in the Fig. 10.1 below:
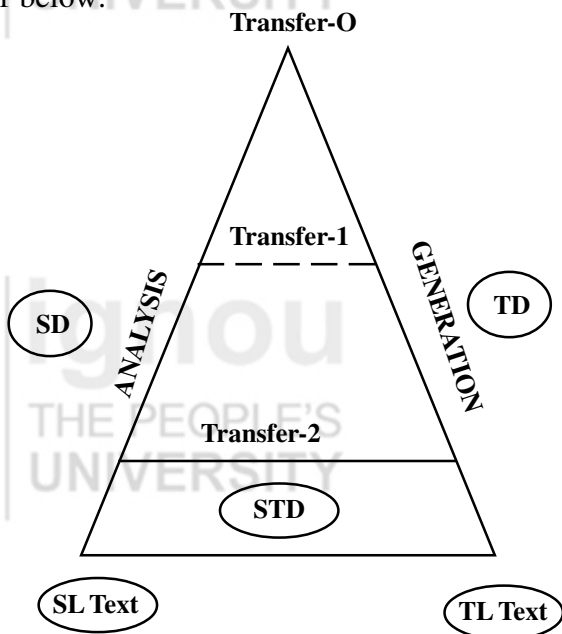
Fig.10. 1: Variants of Transfer Model of Machine Translation
(**Source:** Tucker, Allen B. (et al.)

In this system three dictionaries are needed: i) a source language dictionary (SD), ii) a target language dictionary (TD), and iii) a transfer dictionary i.e. bilingual dictionary (STD). Source language dictionary (SD) analyses the source language text, sentence by sentence. Bilingual dictionary transfers the analysed source text into target language. Then target dictionary generates the text into target language. In this type of system, transfer stage requires bilingual dictionary for each set of language pair. In a multilingual environment, the number of transfer blocks required would be equal to the number of languages a MT system covers. METAL from Siemen Company from Germany (Now with GML and LANT Company) is a commercial MT system based on the 'transfer' approach.

Interlingua Approach: In this system the source text is analysed into abstract representation, which is designed to be a kind of language independent 'Interlingua' and can serve as an intermediary between large numbers of natural languages. Here the translation is done in two stages: i) from source language to Interlingua and ii) from Interlingua to the target language. Fig.10.2 shows Interlingua model of machine translation. The example of Interlingua system is MT system by Cordier and Mograbhi which translates cooking recipes from French into Arabic.
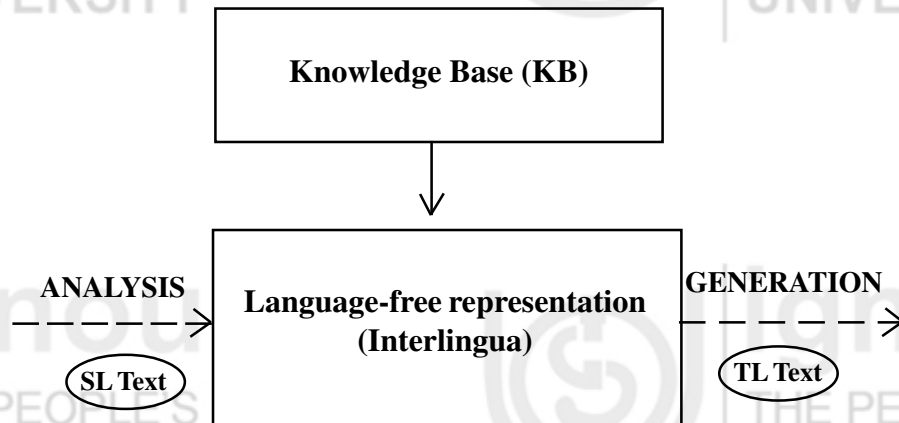
Fig. 10. 2: Interlingua Model of Machine Translation
(**Source:** Tucker, Allen B. (et. Al.)

Apart from the above mentioned techniques of the MT systems, machine translation can be done by using other techniques such as rule-based translation, example-based translation and statistical machine translation.

Rule-based Translation

The most common technique to use MT is by coding grammatical rules of source and target languages in the software and get the translation done using these rules and dictionaries specifically created for this purpose.

Example-based Translation

The other technique to use machine translation is by storing the source and target language pairs as example base and then match the new sentences for similarities from the example base. Translation obtained from the best match is called Example-based Translation Method.

Statistical Machine Translation

In addition, statistical methods can be employed to increase the efficiency of the translation. Statistical Machine Translation is a relatively new technique. It is

not yet widely use. It uses collections of documents and their translations to 'train' software. Over time, these data driven systems 'learn' what makes a good translation and what doesn't and then use probability and statistics to decide which of possible translations of a given word or phrase is most likely correct based on the context.

10.7.1 MT Systems for Mainframe, Personal Computers (PC) and the Internet

Most widely known commercial MT Systems like SYSTRAN, METAL, LOGOS and FUJITSU ATLAS initially developed for mainframe computers, have also brought out their PC based versions. SYSTRAN Company offers a wide range of PC products such as SYSTRAN Professional, SYSRAN Personal, SYSTRAN Office Translator and SYSTRAN Web Translator. The SYSTRAN MT systems with large dictionary databases and large number of languages have advantages over other PC based systems. At present, there are four types of translation demands from MT systems:

i)   Use of MT for Dissemination;

ii)   Use of MT for Assimilation;

iii) Use of MT for Interchange; and

iv) Use of MT for Information Access Systems.

i)   **MT Systems for Dissemination:** This type of demand is made to have quality translation for publication purposes. To fulfil this demand, most of the MT systems produce translation which must be revised or 'post-edited' by human translators to achieve publishable quality. In recent years, the MT systems for dissemination purposes have been augmented by developments in translation tools (e.g. terminology databases, translation memories, etc).

ii)   **MT Systems for Assimilation:** As mentioned earlier, MT systems produce draft translation and it must be revised by human translator to reach publishable quality. However, at times, users are satisfied with draft translation produced by MT systems because they can extract or assimilate what they need to know from the unedited version of the translation. With the coming of cheaper PC-based MT systems in the market, this type of use has substantially increased.

iii) **MT Systems for Interchange:** This demand is for translation of electronic text on the Internet, such as translation of web pages, electronic-mail and electronic 'chat'. This type of demand is increasing rapidly. To fulfil this demand there is need for immediate translation to convey the basic contents of the message. Here, MT systems are playing major role, since they can operate virtually. These systems carry out translation in-real time and online. People are using MT systems for this purpose and have no objection to the poor quality of translation, because it fulfills their immediate need. Another area of MT research is the development of systems for spoken language translation e.g. in telephonic conversation and in business negotiations.

iv) **MT Systems for Information Access Systems:** This demand is for integration of translation software into : a) Systems for the search and retrieval of full-texts of documents from databases (e.g. retrieval of translated electronic version of journal articles in science, medicine and technology or

for retrieval of bibliographic information); b) Systems for extracting information (e.g. product details) from texts in particular from newspaper reports; c) Systems for summarising texts; and d) Systems for integrating non-textual databases. This field is the focus of a number of research projects in Europe. The aim is to provide access, to all members of European Union, to the sources of data and information, whatever may be the source language.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of the Unit.

5)   What is Machine Translation? Describe the types of translation demands, which present day MT systems are required to meet.

....

....

....

....

....

10.7.2 Machine Translation Research in India

India is a linguistically rich country with 24 official languages, each of which is spoken by millions of people in the country. Since most of the information is generated in English and English and Hindi constitute bulk of correspondence in government offices, these languages have been identified as priority area of research in machine aided translation in India. Accordingly, two specific areas of research have been identified:

i)   MT systems for translation between Indian languages, and

ii)   MT systems for translation between English to Hindi.

Realising the immense potential of MT, Department of Official Language (DOL), Government of India, began actively funding projects in MT research.

Currently, institutions in the country namely C-DAC, Mumbai and Bengarulu and IITs have taken the lead in developing MT systems. Ministry of Information Technology has identified the following domains for the development of domain specific translation systems:

i)   Government administrative procedures and formats;

ii)   Parliamentary questions and answers;

iii) Pharmaceutical information; and

iv) Legal terminology and judgments.

C-DAC (Centre for Development of Advanced Computing) Mumbai and Bengaluru (erstwhile National Centre for Software Technology (NCST) Mumbai) is a scientific society under the aegis of Department of Electronics and Information Technology. It is devoted to the research and development in the area of software technology. C-DAC has undertaken many projects and one of the projects in the

area of machine translation is called E-ILMT (English to Indian Languages: Machine Translation System). The members under this project constitute IITs, (Hyderabad, Mumbai, Allahabad) state universities (Jadavpur, Utkal) IISc Bengaluru and C-DAC, Mumbai and Pune. The scope of the project E-LIMT is to develop and design machine translation system from English to Indian languages in the areas of tourism and health care. The main objective of the project is to remove language barriers in a country like India where there are 24 official languages.

(http://www.cdacmumbai.in/index.php/cdacmumbai/)

Department of Computer Science and Engineering of IIT, Kanpur has developed two machine translation systems for translating English text in Indian languages. These MT systems are ANGLABHARTI and ANUBHARTI. ANGLABHARTI system is based on pattern directed approach. This means that different patterns of source language are examined and stored in the system. Most of the translation job is done by the machine on the basis of the patterns stored in the system. Only 10 per cent work is done by human intervention in the form of post editing work. ANUBHARTI system of MT is based on example-based approach. This approach needs a database of examples for translation work.

(http://www.iitk.ac.in)

'Anusaarka' is a machine translation system developed by Chinmaya International Foundation, IIT Hyderabad and University of Hyderabad, Department of Sanskrit Studies. Anusaarka is a Sanskrit word which means to follow. It is an English Hindi language accessing software. This helps the users to have access to the translated text in any Indian language from the source language(s) i.e. English or any Indian regional language.

(http://anusaarka.iiit.ac.in)

The slow development of MT systems in India is due to lack of lexical resources for Indian languages. Indian groups are now addressing this challenge jointly by starting a collaborative open source initiative called 'LERIL (Lexical Resources for Indian Languages), which includes several groups such as IIIT Hyderabad, NCST (now C-DAC Mumbai), Mumbai, Kendriya Hindi Sansthan, etc. Sharing of resources would help MT projects to take off at a faster rate. In conclusion, it can be said that India has made significant progress in MT research. Currently, Ministry of Information Technology is sponsoring about 75% of the MT projects in India. The Technology Development for Indian Languages (TDIL) Programme was launched by Ministry of Information Technology, Govt. of India in the year 1991-1992. The Programme aims at promotion and development of computer-based translation tools for Indian languages.

(http://www.tdil.mit.gov.in/).

10.7.3 Translation Service from MT Systems

Search Engine like Google is offering rough automatic translation services for many languages. Google interface offers Google homepage, messages and buttons to display in 135 languages. It covers following Indian languages: Bengali, English, Gujarati, Hindi, Kannada, Malayalam, Marathi, Oriya, Punjabi, Sindhi, Tamil and Telugu. Many of the MT systems offer free translation facility on the Web. Listed below are some of these sites:

http://ww.freetranslation.com/

http://www.appliedlanguage.com/

http://www.systranet.com/

http://www.babylon.com/

10.8 COMPUTER-BASED TRANSLATION TOOLS

It has been observed that professional translators spend considerable amount of time in consulting translation tools like technical dictionaries, such as monolingual, bilingual and multilingual dictionaries, glossaries, etc. to select appropriate terms and phrases while translating. They were waiting to have computer-based translation tools to speed up translation process. With the advances in computers and telecommunication technologies, the development of computer assisted translation tools became feasible.

10.8.1 Translation Workstation

Translation workstation offers combined access to computerised dictionaries, terminological databanks, multilingual word processing systems, the management of glossaries and terminological resources, appropriate facilities for input and output of text and translation memories. There are four main vendors of translation workstations and their products are as follows:

i)   TRADOS 6 Multi Term Workstation;

ii) Transit XV Workstation from STAR AG Company;

iii) Translation Manager from IBM; and

iv) The Euro Lang Optimiser Workstation from LANT in Belgium (previously sold by SITE in France).

10.8.2 Translation Memory

Translation Memory (TM) is a software program designed as an aid for human translators. It consists of a database that stores text segments (which can be a sentence or sentence like units) in source language and their translation in one or more languages. Using TM, a translator can translate, save and reuse translated sentences and passages. TM saves pairs of terms or strings of texts and reproduces them when the same source language term or string comes along in any other position in the document being translated. This helps the translator become more efficient and consistent. In addition, a translator can always use the same TM for future translations and hence achieve consistency in terms of terminology and style across translation jobs. Other advantages of TM are : i) Consistency in common definitions, phrases and terminology when a number of translators work on a single translation project; ii) Speeding up overall translation process; and iii) Making the translation process cost effective for long term translation.

10.9 TRANSLATORS ASSOCIATIONS

Many countries have active national associations of translators, interpreters and terminologists which play a major role in improving the quality of translation and developing standards and recommendations.

In India, Indian Scientific Translators Association (ISTA) is dedicated to the cause of promotion of scientific translation in India. The main objectives of the association are to: promote facilities for scientific translation in India; improve the status and service conditions of scientific translators; promote training facilities for scientific translation; convene conferences or conduct seminar on scientific translation; bring out publications; and cooperate with national and international organisations with similar objectives.

At the international level, one such association is the International Federation of Translators, Interpreters and Terminologists (FIT). FIT has members from over 100 translators' associations from all over the world. FIT unites these associations helping them to benefit from shared knowledge and experience. It aims to harmonise translation standards and seek conformity for translation quality criteria. It also encourages the establishment of new translators associations in countries where they do not yet exist and nurtures their early development. FIT maintains operational relations with UNESCO. (http://www.fit-ift.org/)

10.10 LIBRARY'S ROLE IN FACILITATING TRANSLATIONS

Libraries can play an active role in meeting user's demands for translation. They should have information about translation pools, translation centres, professional associations, Government agencies, commercial publishers and their products (including cover-to-cover translated journals.), directories of translators and translating firms. The library should have these sources: both published as well as online, on up-to-date basis and it should be able to assist the users in identifying institutions holding the needed translations. If demands are very frequent, then library staff members or resource persons who are available when needed, should be able to either translate or abstract or provide summaries of the material needed to meet urgent need.

10.11 SUMMARY

Translation service is one of the most responsive services of libraries and information centres. The spectacular growth in information technology, the widening reach of the Internet, the expansion of trade globally and ever increasing scientific and cultural cooperation have undoubtedly increased the demand for translation service. However, reduction in funding for information services has resulted in significant decline in translations made on ad hoc bases. This perhaps may be one of the reasons which have led to the closure of International Translation Center as well as its prestigious publication *World Translation Index*.

Research in machine translation has resulted in number of MT systems for mainframe, personal computers and the Internet. The development of computer-based translation tools such as multilingual dictionaries, terminological databanks, multilingual word processing systems and translation memories are greatly facilitating the translation process for both human translators as well as for automatic translation. Demand for translation of electronic text on the Internet such as translation of web pages, electronic mail, and electronic 'chat' is rapidly increasing. Here, MT systems are playing major role by providing translation on line and in-real time. In India, research in machine translation is in progress in

two areas viz., MT systems for translation between Indian languages and MT systems for translation between English to Hindi. Currently, the institutions in the India namely C-DAC and Indian Institute of Technology are actively involved in MT research.

10.12 ANSWERS TO SELF CHECK EXERCISES

1) Literal translation is translation of exact words or contents of the original text without any exaggeration or imagination. Literal translation is utilised for factual type of materials such as commercial correspondence, legal materials, technical materials as well as scholarly materials in the pure and applied sciences and social sciences.

   Literary translation is translation of materials in humanities such as novels, plays, poetry, films, television, radio, motion picture scripts and vocal music texts, etc. This type of translation differs from science and technology translation as here style and techniques of expressing feelings are more important.

   Second difference is the delivery of material in target language. Translation of literary material is destined for mass consumption. On the other hand scientific, technical, legal and commercial materials are intended for the specialists in a given field. The other major difference is that science and technology translations are done once, while literary classics (such as novels, religious books like Bible, Bhagwat Gita, etc.) are repeatedly translated.

2) International Translation Center (ITC) closed its operations in December 1997. ITC was set up in 1961 as European Translation Centre in Delft, The Netherlands, to avoid duplication of translation efforts and to exchange translations. About 20 western European countries in cooperation with OECD and the United States established European Translation Centre (ETC). The participating countries had national centers which, together with ETC, formed an international translation network. The ETC acted as a referral center, maintained a central information file, distributed translations and announced all translations in the monthly *World Index of Scientific Translations and List of Translations Notified to ETC (1967-77)* and maintained lists of translators and translation agencies. In 1975, ETC expanded its activities to announce translations available from other countries also and was named as International Translation Center (ITC). The name of the announcement bulletin also changed to *World Transindex* in 1977 (1977 to 1986). From 1987 this publication was renamed as *World Translation Index (1987 to 1997)*. International Translation Center published 10 issues of *World Translation Index* (WTI) per year. First issue of WTI provided list of cover-to-cover translated journals. WTI covered citations of cover-to-cover translated journals and ad-hoc translations of periodical articles, patents, standards, books, regulations, etc. International Translation Center did not translate but registered and indexed translations performed by cooperating institutions, firms and individuals who voluntarily deposited copies of the translations with the Center. WTI centralised translation announcements made by participating agencies.

3) NISCAIR (formerly INSDOC) has been providing translation services to S&T community since its inception in 1952. It caters to the translation

requirements of National Laboratories, S&T Institutes, R&D Organisations, Corporate and Public Sector Undertakings, Universities, Research Scholars, etc. NISCAIR provides translations of S&T documents from 20 foreign languages into English. The languages include Chinese, Czech, Danish, Dutch, French, German, Hungarian, Italian, Japanese, Norwegian, Polish, Portuguese, Rumanian, Russian, Serbo-Croatian, Spanish and Swedish etc. NISCAIR provides reverse translation (from English to foreign languages) also. Translation of English text (maximum of one page), to French, Russian and Spanish is undertaken on request. Translation of full English document to Japanese is provided on request. NISCAIR also provides interpretation services in Japanese language.

4) Institutions involved in translation activities in Humanities and Social Sciences in India are as follows:

1) National Council of Educational Research and Training (NCERT);

2) State Council of Educational Research and Training (SCERT);

3) Sahitya Akademi;

4) Central Institute of English and Foreign Languages (now English and Foreign Languages University (ELU));

5) Institute of Asian Studies; and

6) Indian Council for Cultural Relations (ICCR).

5) Machine translation is application of computers to the task of translating text from one natural language to another. In MT system, the computer program analyses the text in one language – the 'source language' and then produces the equivalent text in another language – the 'target language'. Machine translation is also referred to as 'automatic translation'.

At present, there are four types of translation demands from MT systems. These demands are for:

i) Dissemination;

ii) Assimilation;

iii) Interchange; and

iv) Information Access Systems.

10.13 KEYWORDS

Computational Linguistics	:	Linguistic studies by use of computer to process and correlate linguistic data.
Linguistics	:	Science of languages or having to do with language or study of languages.
Linguistic Analysis	:	Breaking down of the elements of a language into basic units.
Semantics	:	Relating to meaning, especially of words.
Syntax	:	The positioning of words in a sentence and their relationship to each other.
Translation Memory	:	It is software program designed as an aid for human translators. A translation memory

consists of a database of text segments in source language and their translation in target language. Segments can be individual words or multiword phrases. Using TM a translator can translate, save and reuse translated sentences.

Translation Workstation : Computer-based translation tools for professional translators consisting of dictionaries, terminological databases, multilingual word processing software, OCR scanners, laser printers and translation memories.

10.14   KEY TO ABBREVIATIONS

C-DAC	:	Centre for Development of Advanced Computing
IIT	:	Indian Institute of Technology
IIIT	:	International Institute of Information Technology
INIST-CNRS	:	Institute for Scientific and Technical Information-National Centre for Scientific Research
NCST	:	National Centre for Software Technology
VINITI	:	All – Russian Scientific and Technical Information Institute

10.15   REFERENCES AND FURTHER READING

Bergeijk De Van."Development in the Bibliographical Control of Translations with Particular Reference to International Translation Centre". *Interlending and Document Supply* 18.4(1980): 128-131. Print.

--- . and Risseuu M. (1980). "The International Translation Centre." *Journal of Information Science* 2.1(1980): 37-42. Print.

Gaspari, Federico and John Hutchins. "Online and Free! Ten Years of Online Machine Translation: Origin, Development, Current Use and Future Prospects." *Proceedings of The MT Summit XI, September 10-14, 2007*, *Copenhagen*, Denmark:n.p., 2007. 199-206. Print.

Hutchins, John. "The Development and Use of Machine Translation Systems and Computer Based Translation Tools." *International Symposium on Machine Translation and Computer Language Information Processing, June 26-28, 1999*, *Beijing*, China:n.p., 1999. Print.

--- . "Towards a Definition of Example Based Machine Translation." *MT Summit X, Phuket, Thailand, September 16, 2005, Proceeding of The 2nd Workshop on Example –Based Machine Translation.* Thailand:n.p., 2005. 63-70. Print.

Sable, Martin H. "Translations." *Encyclopedia of Library and Information Science*. Ed. Allen Kent, et al.Vol.31. New York: Marcel Dekker, 1981. 106-134. Print.

Tucker, Allen B. and Sergei Nirenburg. "Machine Translation: A Contemporary View." *Annual Review of Information Science and Technology* 19(1984): 129-55. Print.

BLOCK 4 WEB PRODUCTS AND SERVICES

Introduction

This Block deals with a variety of web products and services. The theme of this Block comprises of web sharing, collaborative content development and web marketing. Initially, the emphasis was on traditional information products and services which later shifted to electronic products and services. Currently, our attention is more focused on web products and services. These new developments have brought a significant change in the domain of library and information science. In order to keep pace with these changes, there is a need for more skilled LIS professionals.

This Block comprises of three (11-13) units.

Unit 11, titled "Web Sharing", explains the various Web 2.0 applications and tools and how these can be used in libraries to reach out to potential users and provide better services to them. The Unit also discusses how the advent of Web 2.0 concepts and tools has brought a sea change in the process of library services of today. It also discusses the concept of Library 2.0 which involves application of web sharing technologies to the library services. An attempt has been made to demonstrate to students the sharing aspect of the Web with the help of relevant examples.

Unit 12 is on "Collaborative Content Development". In collaborative content development, a number of people/users/stakeholders participate in the generation of content. This Unit discusses in detail the tools for generating contents. It also explains the web content life cycle framework with the help of examples. Further, this Unit explains the best practices for the development of collaborative content and also its implications on libraries.

Unit 13 deals with the concept of "Web Marketing". This Unit highlights the theoretical as well as the practical aspects of web marketing and its application to library and information services. It also explains web marketing tools, techniques and strategies which can be applied in the area of LIS to design effective strategies in the Web environment.

UNIT 11   WEB SHARING

11.0   OBJECTIVES

After reading this Unit, you will be able to:

- describe the need for and scope of web-based services;

- discuss use of Web 2.0 on the Web;

- explain application of web-based products and services in libraries; and

- discuss customised services and online learning environment.

11.1   INTRODUCTION

The spectrum of web-based services covers online shopping, e-mail, chatting, discussion forums, blogs, wikis, social networks, YouTube, Twitter, etc. Now, the products are more personalised compared to earlier products. At present, the trend is to develop tailor made products and services on demand like online e-learning modules, information digest systems, literature review, etc. which are more user oriented. The present web technology has given power to users towards controlling their subscription and expressing their needs. The implementation of Web 2.0 technology has further empowered the users to be more interactive with the existing services which are available on the World Wide Web (WWW).

The Web with static content is considered to be the earlier form of Web 2.0. This was slowly replaced by dynamic content. This was an intermediary stage. In the last few years, the Web has become a medium which is more participatory, user oriented, interoperable and interactive. The term 'Web 2.0' was coined by Dale Dougherty, Head of Maker Media division of O'Reilly in 2003. Since then it has become a popular concept.

11.2 WEB-BASED PRODUCTS AND SERVICES

A product is a tangible entity, whereas, a service can only be experienced and used. A bank sells gold coin which is a product, while the same bank offers money transfer, which is a service. In the present Internet arena, the differentiation of product and service has reduced. For example, web OPAC of a library and information centre is a product as well as a service. It has two parts, offering cataloguing service through web OPAC is considered to be a service while getting the list of references the library and information centre has on a particular subject /author, etc. will be considered a product. Hence, a service can be a product. For example, delivery of railway tickets using the Web is a service while the e-ticket is a product. When services and products are offered using web technology, it is known as web-based products and services. Often they are online but in some cases they are delivered offline also.

The concept of 'web sharing' is the hallmark of Web 2.0. It is all about sharing the data, ideas and efforts and generating the services which have made a mark on the global scenario. Contrary to the concept of static Web of 90's, the present Web i.e. Web 2.0 offers collaborative moves towards laid projects irrespective of the geographical location of stakeholders. The broad classes of collaborative tools such as Content Management Systems like MediaWiki, Learning Management Systems like Moodle, Digital Library Software like Dspace, Eprints, etc. are widely used in sharing what one has with rest of the world. Besides, services like YouTube, Social Networking websites like Twitter, Facebook, Orkut, etc. have made a great mark towards sharing personal and professional information.

11.2.1 Web 2.0: Characteristics

Implementation of Web 2.0 technology has revolutionised the Web. Web 2.0 technology provides interactive environment for users to share, collaborate and own their data. It has provided methods for use of dynamic content, improved scalability and use of standards for better interoperability. The typical characteristics of Web 2.0 are as follows:

1) **Web as a Platform**

    The applications or products are developed using the Web as a platform. A user can use the application online through a web browser. One of the major components of such applications is their use through a browser. The use of a web browser reduces the dependency of a client on a particular platform. It creates an interoperable environment so that different standards and applications can be used. This enhances the accessibility of users towards web-based application. For example, a person sitting in India can use web browser and book railways ticket for Europe trip. The person can make the payment from her/his credit card issued by any bank in India and money

will be automatically deducted from her/his account in Euros (•). There is an online API (Application Program Interface) which automatically converts Indian Rupee (₹) to Euros (•). This is done without the knowledge of the client.

2) **Participatory Web**

Technically, it is also known as read / write Web. The older version of Web used to have one way communication i.e. from source to client. But due to implementation of Web 2.0 technology, now client can also communicate with the source. The Web has become an interactive and a participatory medium. This has changed the mode of communication completely. Now, librarians can talk directly to their users through their blogs, twitter, orkut, facebook, etc. They can announce new services/products, etc. of the library and also directly address to the queries/problems of their users.

Web 2.0 has enabled people to work on participatory projects irrespective of their location. The example of such a project is Wikipedia. Wikipedia is an online encyclopaedia developed on participatory basis in different languages. In Wikipedia, an article can be written by a number of people. They can add, delete, edit and give hyperlink(s) to the contents of the article given on Wikipedia. Below is given a screen shot (Fig 11.1) of the home page of Wikipedia. For better understanding, it is suggested to visit and explore the website of Wikipedia. The experience of browsing the website will further educate you to the concept of participatory web.
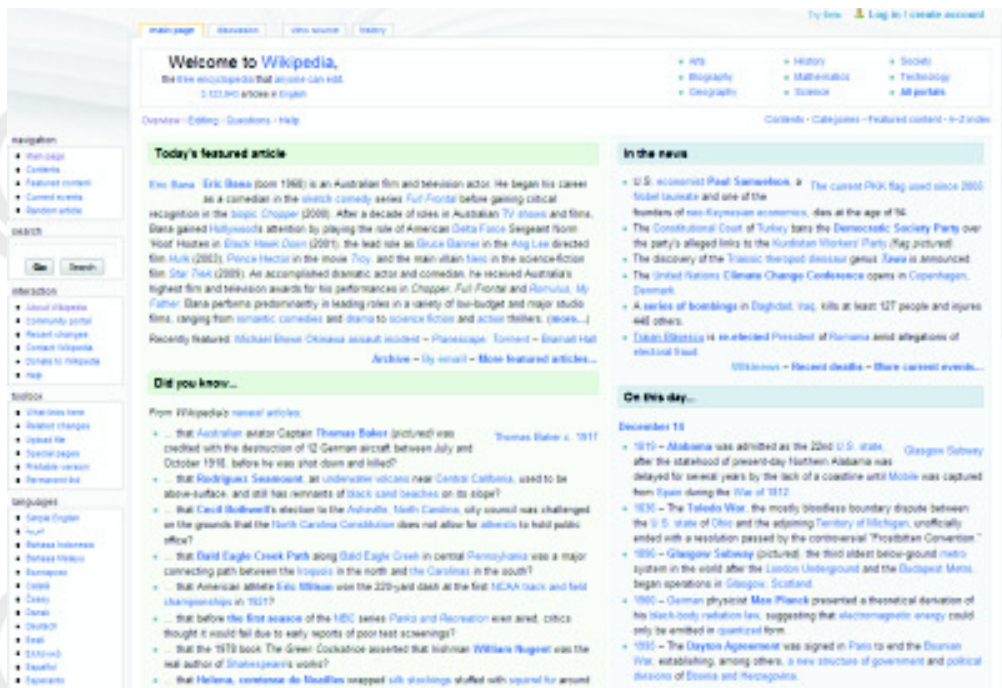
Fig.11.1: Homepage of Wikipedia
(Source: http://en.wikipedia.org/wiki/Main_Page)

3) **User Control**

Web 2.0 has enabled users to control their data. Users can online bookmark those websites which they are interested in. There are services where users can store their appointments and engagement, finance and personal information. The alert services prompt a user about an event which s/he is

interested in. For example, BillQ is a service which alerts users about the payment of their bills. Similarly, Google Alert (Fig 11.2) is an alert service which sends periodical alerts to subscriber about any new additions in the Google. The user gets delivery of alerts through e-mail (Fig 11.3). The user can control the application periodicity, presentation and delivery.
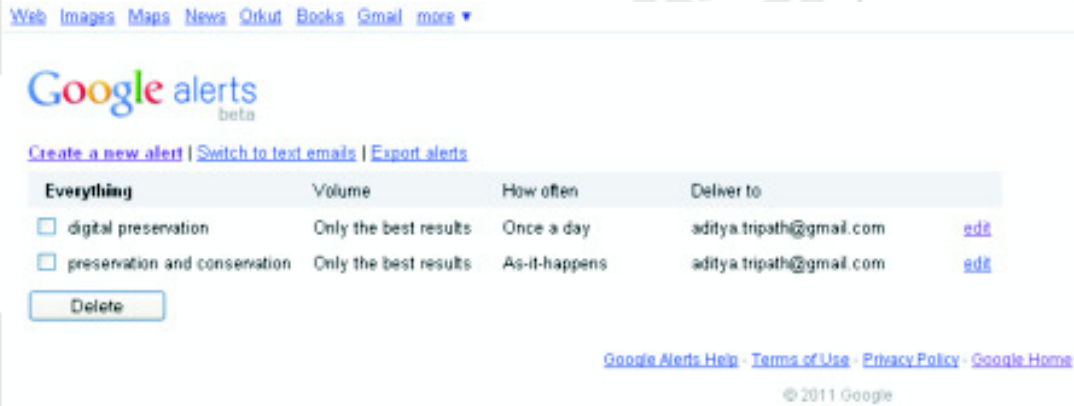
Fig.11.2: Google Alerts
(Source: http://www.google.co.in/alerts?hl=en)
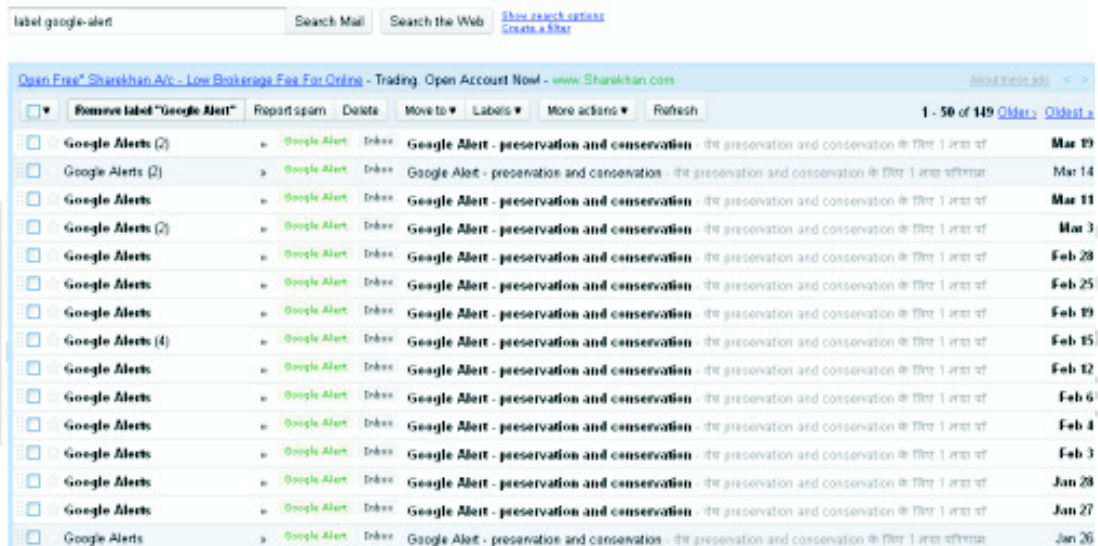
Fig.11.3: Delivery of Alerts through E-mail
Source: alerts received in a gmail account

11.2.2 Web 2.0 Tools

Web 2.0 is an agglomeration of technologies developed in the late 1990s. Web 2.0 indicates an improved WWW. The examples of some of Web 2.0 applications are Google AdSense, Flickr, Facebook, Wikipedia, Podcast, Digg, Google Maps, Technorati. These applications are examples of semantic environment where machines can understand and extract meanings or information. These applications provide an open environment for open communication and reusability of applications as well as generated data in different contexts. It is a move from static websites to more interactive searching and use and innovations.

Self Check Exercise

Note: i)   Write your answer in the place given below.

     ii)   Check your answer with the answers given at the end of this Unit.

1)   What do you understand by Web 2.0?

....

....

....

....

....

....

....

....

....

....

11.3   SOME POPULAR WEB-BASED SERVICES

There are many products/services which play a major role in sharing the information and have made a mark on the society. They do not require any special skill to publish content over the Web. These products/services provide two-way communication and hence, are major sources of information sharing for those who wish to share. The aspects which can be shared over these services range from scholarly content to entertainment. These products are used at a very generic level and can also be very helpful to impart domain specific knowledge.

11.3.1 Wikis

A wiki is type of website where the content is created and maintained by users in collaboration with others. Wikis are tools which facilitate sharing of information among communities. Wikis have a simple interface and are easy to use. Users can access a wiki, view and add content. This content is viewed and edited by other users who visit wiki. Wikis are websites that consist of a number of web pages. These web pages can be viewed and modified by anybody through a web browser. Users can add, modify or delete content in Wikis using a simple markup language or a WYSIWYG (What You See Is What You Get) text editor. The web pages in a wiki are interconnected with each other through hyperlinks and contain images, tables, audio and video components. Wikis are used by commercial enterprises, educational institutions and government organisations for a variety of purposes such as creating an online community and building a knowledge base. There are many wikis on the Internet. Wikipedia (http://www.wikipedia.org/) is the most common and popular wiki. It is the biggest online encyclopaedia. Some other examples of wikis are WikiEducator (http://www.wikieducator.orgý), Wikitravel (http://wikitravel.org) and wikiHow (http://www.wikihow.com/).

Fig.11.4: Homepage of Wikitravel
(Source: http://wikitravel.org/en/Main_Page)

11.3.2 Blogs

A blog is an individual website used as a diary. The other name of the blog is 'weblog'. The term 'blog' was coined by Peter Merholz. People add entries on the website which is read by others and can be commented. Blogs contain text, graphics, audio and video. Based on the medium, a blog can be an art blog (contains graphics), a podcast (contains audio) or a vlog (contains video). Apart from these, blogs can be subject specific, organisation specific or private and device specific (accessed by device like mobile),etc. The community which blogs or is involved in blogging, constructs the Blogosphere. Two examples of blogs are given below for your understanding. "025.431: The Dewey blog" is a blog on the DDC system, which covers the Dewey Decimal Classification System and knowledge organization.

Fig.11.5: Blog on Dewey Decimal Classification
(Source: http://ddc.typepad.com/)

We have also given a screen shot of the KOHA blog. As you all know that Koha is free and open source software library automation package.
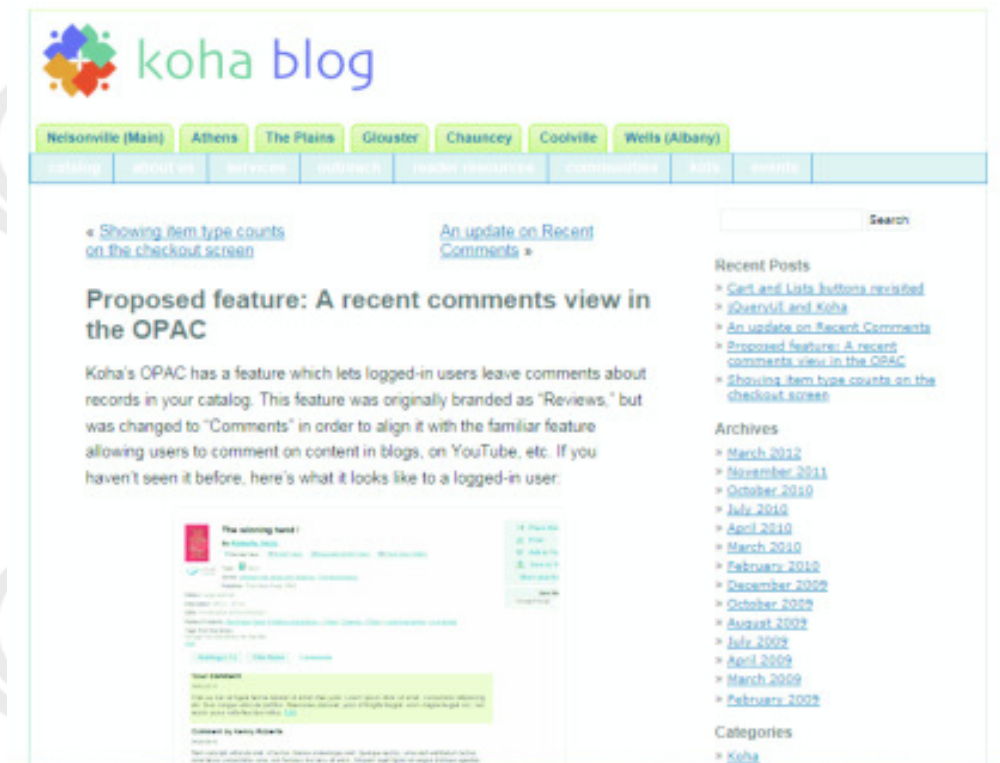
Fig.11.6: Blog on KOHA
(Source: http://www.myacpl.org/koha/?p=677)

11.3.3 Social Bookmarking

Social bookmarking services are for saving and categorising a personal bookmarks collection. Since these websites are social websites, hence, these bookmarks can be shared with others. These services allow the users to tag, save, manage and share web pages all in one place as bookmarks. These bookmarks can be marked as public or private. Sharing can be done only with specified people or groups or within certain networks. People can view bookmarks chronologically, by category or by tags or via a search engine if they are allowed to be viewed. Normally, features of social bookmarking services are as follows:

- Bookmark any website on the Internet and view bookmarks anywhere irrespective of location.

- Share bookmarks and others bookmarks of your interest.

- Discover the most useful and interesting bookmarks on the Web.

- Classify the bookmark with tags.

- Send a message or e-mail the bookmark to a friend.

- Import and export bookmarks.

Some of the examples of social bookmarking websites are given below:
- Delicious (http://delicious.com/help/learn)

- Diigo (http://www.diigo.com/?source=redirect_from_furl)

- Netvouz (http://www.netvouz.com/)

- Faves.com (http://faves.com/home)
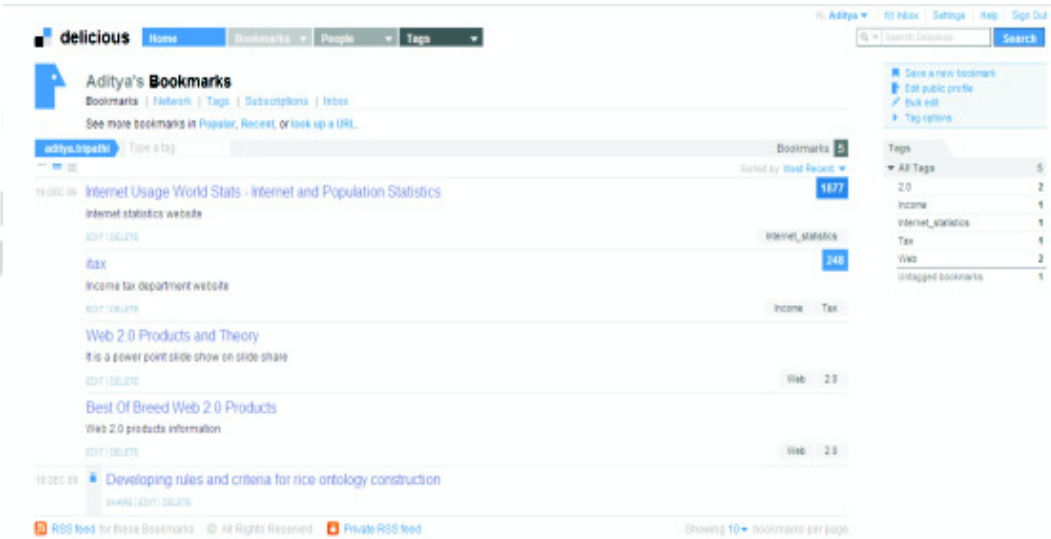
Fig.11.7: Delicious Bookmark Website
(Source: https://delicious.com/#help/aditya.tripathi)

11.3.4 Social Networking

Social networking is grouping of individuals for a specific purpose. Social networking is prevalent among persons at their workplace like offices, universities, schools and in the neighbourhood. By the application of web technologies, there are various web-based online social networking websites emerged through which people share their common interests in hobbies, religion, politics and personal things like ideas, photographs, texts, audio, video, etc. These social networking websites function as an online community of the Internet users. Most of the social networking websites are web-based which have many ways (like e-mail, instant messaging (IM)) for users to interact on the Internet.

The features of social networking websites are as follows:

- Members can share their common interests.

- Members can read profile pages of other members and may contact them.

- Members can organise and combine their online profiles.

- Members can develop an online friendship from foreign countries. By this way they learn about new cultures and new languages.

- Members can create their own network of friends and remove from their list such members that do not share common interests or goals.

Data theft and viruses are some of the issues which jeopardise the social networking websites. The most prevalent danger is online predators or individuals who claim to be someone which they are not.

There are number of social networking websites available on the Web. Facebook, Bebo, Twitter, MySpace, LinkedIn, Hi5, Tagged, Orkut, FriendWise, FriendFinder, Classmates, Ning, Netlog, etc. are some of the examples of popular social networking websites.

Fig.11.8: Example of a Social Networking Website
(Source: http://dlisbhualumni.ning.com/)

Twitter

Twitter (http://twitter.com/) is a social networking website which has become popular around the world. You must have observed that politicians, sportsmen, celebrities often use twitter to get connected with people and let them know about what they feel on any topic of concern, which is also known as tweets. It provides facility to users to follow people over Twitter. The followers can give feedback on the tweets. Features of the Twitter are as follows:

• Twitter allows sending and reading other updates of those whom one is following.

• Messages are limited to 140 characters.

• Updates can be received via the Twitter website, SMS (text messages on mobile), RSS (receive only), e-mails or any third party application which supports twitter, like Tweetie, Twitterrific, and Feedalizr to send Twitter messages.

• Messages can be delivered to restricted community as well as to all.

• People can be searched by name or user name.

• Friends can be imported from friends list of Gmail, Hotmail, Yahoo, etc.

• It lets people know how many are following them.

Fig. 11.9 : A Page of Twitter
(Source:https://twitter.com/#1/Sachin_rt)

YouTube

YouTube is a social networking website where one can share her/his videos. It allows uploading of videos and viewing them online. It provides powerful search to search videos over YouTube. It is a service which is offered by Google. However there are many other websites which offer storage of online videos and viewing them online. Features of YouTube are as follows:

- One can register at YouTube and upload video;

- Video can be viewed online;

- Playlist can be created (only by registered users);

- One can find out how many people have viewed the video;

- Videos can be tagged and commented (liked or disliked);

- It provides tools to add captions and sub-titles;

- Videos can be uploaded through mobile devices like Cell Phone;

- One can share a video of 2 GB size.
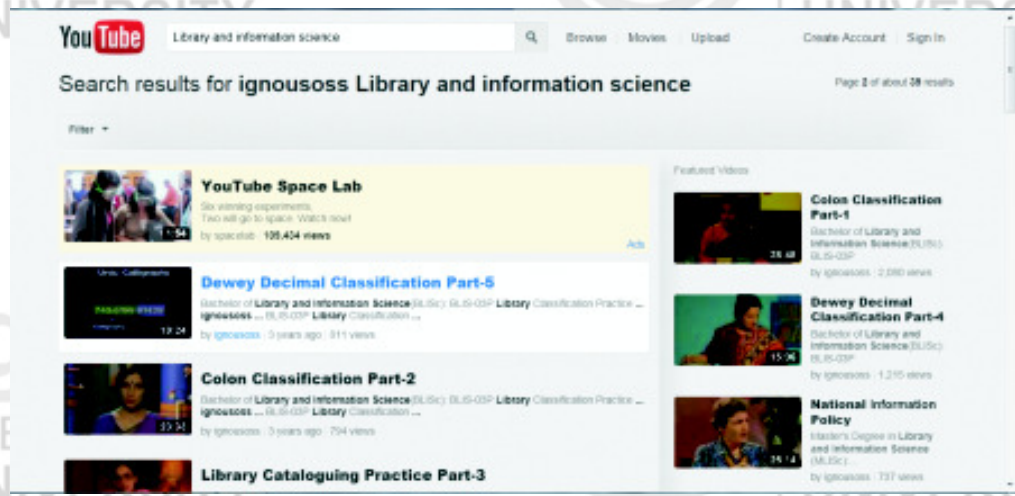
Fig. 11.10: A Page of YouTube
(Source:http://www.youtube.com)

Self Check Exercise

Note: i)   Write your answers in the space given below.

ii)   Check your answers with the answers given at the end of this Unit.

2)   What are the various species of blogs?

....

....

....

....

....

....

....

....

3) What do you understand by social bookmarks?

....

....

....

....

....

4) Give the names of any five social networking websites.

....

....

....

....

....

11.4 USE OF WEB-BASED SERVICES IN LIBRARIES

Web-based services are increasingly being used in library and information centres with the developments in technology and change in the user requirements. New tools have provided the libraries innumerable possibilities to create new resources and services. Web 2.0 technologies have made it possible to customise libraries websites and introduce space for interaction with their users. Libraries are introducing Web 2.0 features in their websites and incorporating Blogs and Wikis. Web-based applications are simple and easy to use and can be used for designing useful library and information services without huge financial expenditure. The popularity of social networking websites, blogs and other tools has influenced the behaviour of users. The library services should be designed keeping in mind the current generation of users. The various Web 2.0 applications enable the libraries to be socially interlinked with other applications and communities. These applications enable interactivity and gathering of feedback on a wide scale.

Some examples of how Web 2.0 features can be used in libraries are:

*   Wikis and Blogs and can be used by the libraries for marketing of library services on the Web.

*   Blogs can be used for interactions with users, faculty and other communities.

*   Libraries can use social networking applications for approaching their users.

*   Blogs can be used for receiving feedback from the users about the library services and resources.

*   Web-based services can be used for creating awareness about the services and resources being provided by the library.

*   The library websites can be designed for direct interaction with the users.

*   Social Networking websites can be used for communicating with users spread over wider geographic distances.

- Social Bookmarking can be used to facilitate users to create and share bookmarks.

- Instant Messaging can be used for providing reference services and making users aware about the library services.

- These applications can be used for providing information about latest books, resources and services.

- A page on a social networking website can be created by a library to reach out to users.

11.5 WEB-BASED LIBRARY SERVICES

Web 2.0 has opened a new area for libraries to enhance their services with more user centric approach. The services using Web 2.0 technologies are popularly being called as Lib 2.0. It is the application of user oriented, interactive, collaborative and multimedia based web technologies for web-based library services and products.

11.5.1 Lib 2.0 or Library 2.0

The term "Lib 2.0" was first coined by Michael Casey in his blogging website LibraryCrunch (http://www.librarycrunch.com). It is a user centred environment for libraries where they can:

- gather information from other users,

- share their views,

- get customised services,

- download streaming multimedia data, and

- jointly work on papers or projects.

Overall, the approach of Lib 2.0 is to empower users. Following are some Lib 2.0 services available on the Web:

A) **LibraryThing**

   LibraryThing (http://www.librarything.com/) is an innovative online service for people to catalogue books from their collection. The catalogue would be available online and can be accessed over the Web and even on the mobile phone. While cataloguing, one does not need to fill all the details about the book. If the book is available in online store e.g. Amazon or Library of Congress, the cataloguing details would be fetched from there itself. LibraryThing attempts to connect people through same book. The features of LibraryThing are as follows:

   - Create your own library with number of collection.

   - Import catalogue. It provides facility to import catalogue from other sources if the document is already catalogued online e.g. by Library of Congress or Amazon.

   - Customise library page. Librarians can customise the look and feel of their library web page.

   - Add events. Facilitates to add a new happening in the library.

   - Create forums. A forum can be added to know the feedback of library users.

- Get recommendations for books to be included in collection.

- Online statistics. Statistics of the library to demonstrate the activities of library.

- Online reviews. Users can post online reviews of the books they read.

- Tagging of books.

- Clustering by subject and author.

- Mobile access.
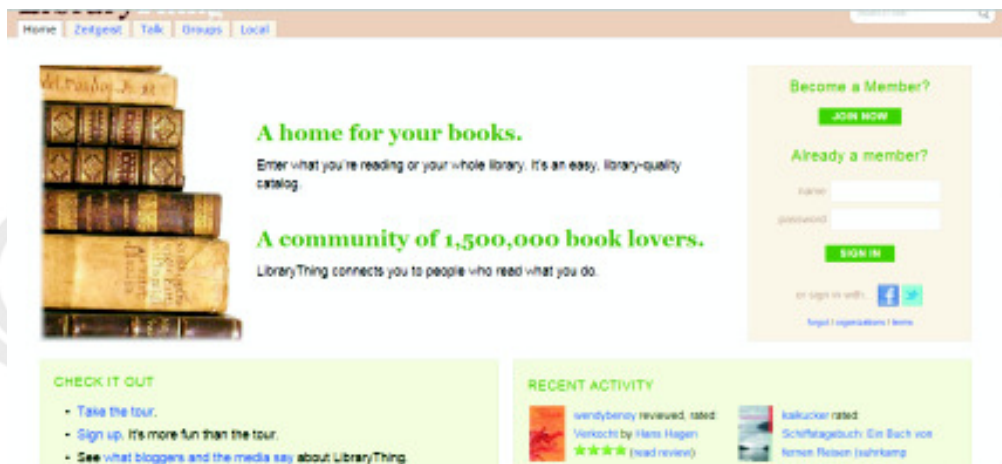
Fig.11.11: Homepage of LibraryThing
(http://www.librarything.com/)

B) **GuruLib**

GuruLib is an entrepreneur initiative (http://www.gurulib.com/index.php) of two students, Christina Leung and Mohammed Rana Basheer from University of Missouri. This Lib 2.0 enabled website supports cataloguing of personal collections with the following features:

- Barcode enabled searching using a barcode reader or web cam or mobile camera to read UPC or ISBN code on the book, DVD or CD.

- Searching a book by title, author or keywords.

- Mobile access.

- Search and access hundreds of public and university libraries around the world to collect cataloguing information.

- Arrange books, movies, music, games and software in virtual shelves.

- Create unlimited shelves online as the way one wants.

- Write book or movie reviews and share them.

- One can set a target price for an item and will be intimated by GuruLib through e-mail when the price reaches to target price.

- One can take notes as reading a book or watching a movie.

- One can keep track of loaned/borrowed documents.

- Contains Facebook Application, iGoogle Module, RSS Feeds and Blog widgets.

Fig.11.12: Homepage of GuruLib
(Source: http://www.gurulib.com/index.php)

C) **Revish**

Revish (http://www.revish.com/) is not exactly a Lib 2.0 service but libraries can utilise it for reading online reviews and recommending books for their users. Revish facilitates reading and sharing reading experiences with others. One has to get registered in order to use the Revish service. The features for Revish are as follows:

- User can write reviews of any books s/he reads and publish.
- User can maintain a reading list and share it with her/his friends.
- User can save reading history.
- Users can participate in groups and discussion forums.
- It provides API (Application Programming Interface) for use in personal website or blogs.
- PI and widgets to include your Revish content on your blog or website.
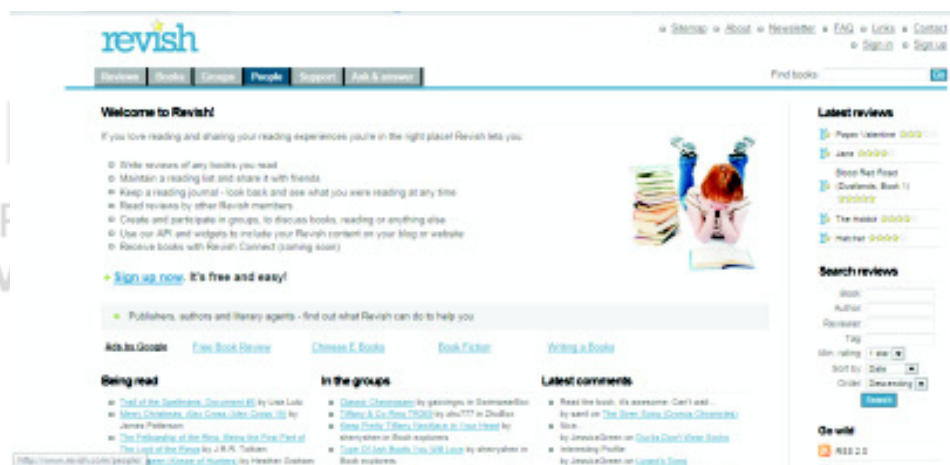
Fig.11.13: Homepage of Revish
(Source: http://www.revish.com/)

Self Check Exercise

Note: i)   Write your answers in the space given below.

   ii)   Check your answers with the answers given at the end of this Unit.

5)   What is a "Lib 2.0"?

....

....

....

....

....

6)   What are the salient features of LibraryThing?

....

....

....

....

....

7)   Differentiate between GuruLib and Revish.

....

....

....

....

....

11.6   WEB-BASED LEARNING AND EDUCATION

Learning and education are important dimensions in the growth of human society. Illiteracy is considered as backwardness. The Web has come up as a medium to impart education and supplement the traditional teaching. Online courses and certifications have changed the face of traditional education methods. ICT has enabled sharing of teaching expertise and the Web has become the medium. In web-based learning environment teachers offer lessons to students including, multimedia learning objects. Multimedia learning objects include text, audio, video and graphics as a carry medium for offered contents. Some examples of websites catering to web-based learning and education are discussed in the following sections.

11.6.1   AnswerTips

Answer.com Inc. (http://www.answers.com/) is an online service for websites to be used by webmasters. AnswerTips provides online ready reference for the visitors of the library website. It allows visitors to access definitions and fast

facts on millions of obscure words, personalities or slang words. This service can be used in any website by adding a small script in the HTML template of website.
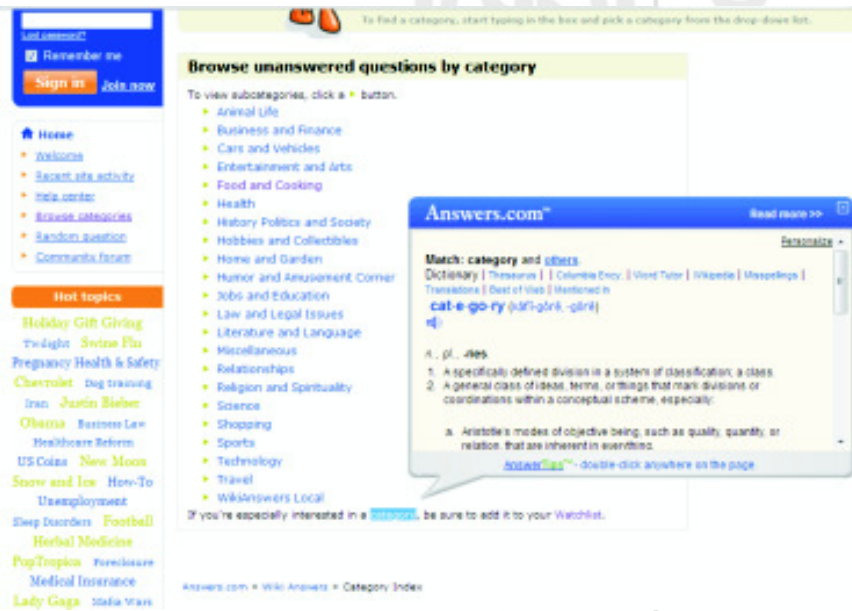
Fig.11.14: Example of AnswerTips
(Source:http://wiki.answers.com)

11.6.2 Campusbug

Campusbug (http://www.campusbug.com/index.php) is the first social learning network website. It is a service which provides educational as well as social networking for the students. The service is free of cost. It is a unique website which combines education, social networking and e-commerce together. The web page can be customised by users. This web service has an inherent store to purchase apparels, office supplies, etc. This store and the advertisements support this web service that's why it is free of cost. The features of Campusbug are as follows:

- Take online tests.
- Read question banks.
- Discussion over forums.
- Create blogs. Students and teachers can create their blogs to share ideas.
- Send message.
- YouTube for sharing movies.
- Photo sharing.
- Online chat room for discussion with friends.
- Write a document online with EZ writing module.
- Create bibliographies according to MLA, APA and Chicago format using a bibliography generator.
- Store, share and download bibliographies.
- Conduct online polls. Online polls can be conducted to understand the mass opinion.

- Play online games.

Fig.11.15: Homepage of Campusbug
(Source:http://www.campusbug.com/index.php)

11.6.3 Elgg

Elgg is an open source and free social learning framework. It provides functionality to run your own social networking website on the Internet as well as Intranet. It provides a platform for individuals to aggregate, store and share their personal learning and working resources. Elgg is a fully featured electronic portfolio, weblog and social networking system, is connecting learners and creating communities of learning.

The features of Elgg are as follows:

- User and web content management.

- Promotes relationships between user and other users, objects and websites.

- Can manage multiple websites in one installation.

- Cross system search.

- User level access controls.

- Event, plug-in and widget APIs.

- Implemented RSS, FOAF (Friend of a Friend), XFN (XHTML Friends Network) for content syndication.

- Implementation of OpenID, OpenSocial concepts.

- Use of multiple database connections for scalability.

- Implementation of user avatar throughout the website which is a context-sensitive menu that allows to perform actions on the user directly to whom the page belongs to, for example, one can send an e-mail to a user.

- Dashboard is a powerful tool for customising the user's homepage by extracting information from Elgg website or from external website like, flickr or twitter.

- Create own profile (users' profile).

- Form group (s) of people with similar interests and ideas. One can moderate the group.

- Group can be private or restricted or could be public.

- Implementation of group level file repository, forum, pages and message-board.

- Implementation of Widgets to extract internal and external content.

Fig.11.16: Homepage of Elgg
(Source:http://elgg.org/)

11.6.4 Moodle

Moodle is an Open Source Course Management System (CMS) for running online e-learning modules. It is available free. Educators can run online course modules for the students. Moodle is the best tool to manage and promote online learning. Features of Moodle are as follows:

- Allows real-time synchronous communication by learners through chat.

- Instructors can conduct surveys on subject matter to know learners view.

- Threaded discussion boards or forums can be created for sharing views on a subject matter.

- Participants for each course can be defined. Assign teachers for courses. Non-editing teacher roles can be created for adjuncts, and part-time instructors.

- Create course having several lessons with set of linked pages. Each page can end with a question which a student chooses to answer to move forward in a course. Add descriptions with images in any area of the course homepage.

- Create online or offline tasks for students. Learners can submit tasks in any file format like, MS Office, PDF, image, A/V, etc.

- Instructor can control opening and closing periods.

- Peer assessment of documents submitted online by students. Participants can assess each other's project. Instructor can make final student assessment.

- Create a glossary of terms attached with a course.

- Create quiz which includes formats like, true-false, multiple choice, short answer, matching question, random questions, numerical questions, embedded answer questions with descriptive text and graphics.

- Individual profiles of learners which includes their picture, helping connect learners socially in the online learning environment.

- Instructor can create group assignments for a group of students.

- Keeping calendar helps in meeting deadlines, alerts meetings and other events. Calendar entries can be created by instructors, students and system administrator.

- Blogs can be created at user level.

- Teachers and students can be enrolled or removed from a course.

- Backup and restoration of course can be done.

- Instructors can create their own custom scales to access the students. They can view assignments and add grades and comments. They can monitor the activities of students using logs.
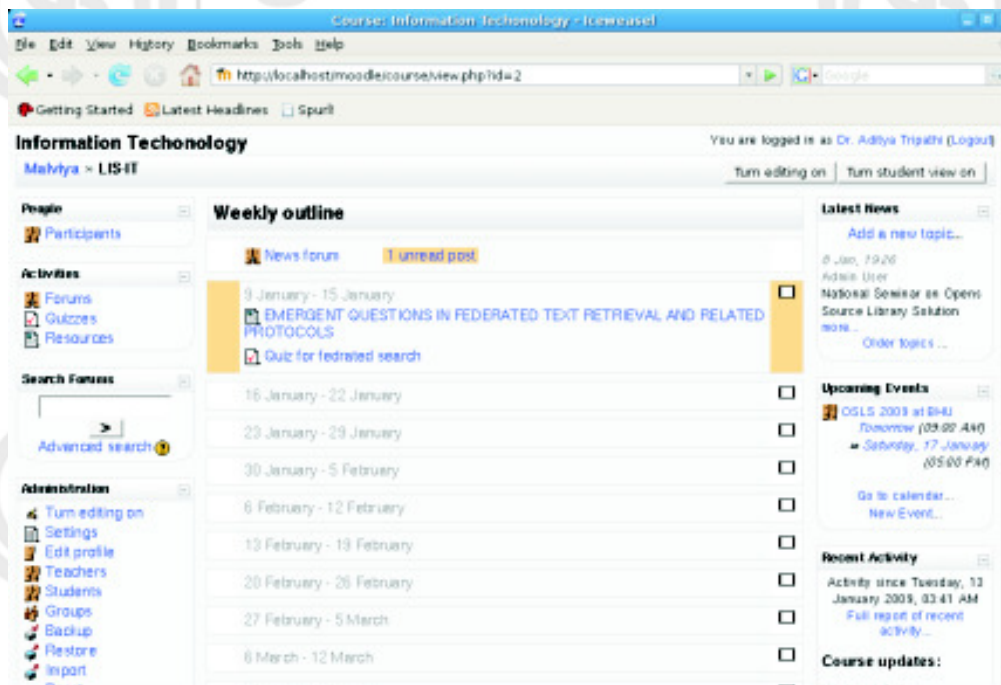

Fig.11.17: A Screenshot of Moodle
(Source: https://moodle.org/)

23

Self Check Exercise

Note: i) Write your answers in the place given below.

ii) Check your answers with the answers given at the end of this Unit.

8) What are various media of web-based learning?

....

....

....

....

....

9) What are the salient features of Moodle?

....

....

....

....

....

11.7 SUMMARY

The Unit discusses about various products and services offered through the Web. It also elaborates the revolution in the web services through Web 2.0. This new version of the Web has made the Web more participatory for the user. A number of social networking websites such as Facebook, Diig, Delicious, LinkedIn have provided a platform to their users where they can share, collaborate and publish their data. The Unit also explains the characteristics and tools of Web 2.0. The different social domains which are on their way to adept Web 2.0 technology for library services etc. are also mentioned. Other web-based services and products such as wikis, social bookmarking, and blogs are also explained with the help of examples.

11.8 ANSWERS TO SELF CHECK EXERCISES

1) Web 2.0 is the improved version of earlier static Web. It provides interactive environment for users to share, collaborate and own their data. It uses web browser as a functional platform through which user can participate in the Web. It is also known as read/write Web.

2) Species of blogs varies with their contents (i.e. text, graphics, audio and video). Based on contents, some of the publicly known blogs are art blog (contains graphics), podcast (contains audio), vlog (contains video). Besides this, subjects specific, organisation specific, device specific blogs are also found.

3) It is the service through which a user saves and categorise personal bookmarks collection in the social websites and shares with others. Such services allow to tag, save, manage and share web pages all in one place as bookmarks and can be marked as public or private.

4) Orkut, LinkedIn, hi5, MySpace, and Ning.

5) Lib 2.0 or Library 2.0 is the use of Web 2.0 technologies in the area of library services. Lib 2.0 is the application of user oriented, interactive, collaborative, and multimedia-based web technologies for web-based library services and products.

6) Salient features of LibraryThing are:

   User can create their own library with number of collection, import catalogue from other sources, customise library page, add events, create forums, get online statistics, see and make online reviews, create tagging of books, etc.

7) GuruLib is a Lib 2.0 enabled website which supports cataloguing personal collections whereas Revish is not exactly a Lib 2.0 supported website. It provides online reviews and recommendations of books for their users.

8) There are various learning media available over the Web. AnswerTips, Campusbug, Elgg, Moodle, etc. are types of web-based learning media.

9) Moodle is a free Course Management System (CMS) for online e-learning. It allows real-time synchronous communication by learners through chat, one can conduct surveys on subject matter to know learners view, discussion boards or forums can be created for sharing views on subject matter, can create courses having lessons with set of linked pages, can create online or offline tasks for students, learners can submit tasks in any file format (MS Office, PDF, image, A/V, etc.), instructor can control opening and closing periods, can be create a glossary of terms, can be created blogs at user level.

11.9 KEYWORDS

Blog	:	Blog is an online calendar in which blog posts are arranged reverse chronologically.
Cotent Management Solution/Sytem (CMS)	:	A content management system (CMS) is a computer software system for organising and facilitating collaborative creation of documents and other content.
Dynamic Web	:	It is a hypertext document which continually updates information as the page is displayed on the Web.
EZ Writing	:	It is a free web-based word processing programme which allows to import, edit and share documents from one convenient location. (http://www.compusbug.com)
e-learning	:	e-learning is web-based learning.
FOAF	:	Stands for *Friend Of A Friend*. It is a machine-readable ontology describing persons, their activities and their relations to other people and objects.
HTML	:	HyperText MarkUp Language. This is used for the formatting and display of web documents.

Interoperability	:	Standardised method or specifications towards creating common ground so that differences of implementation may be less in communication. In other words, services can interact with each other without encountering differences of implementations.
ISBN	:	International Standard Book Number. It is a unique number for the identification of a published book/ monograph.
Lib 2.0	:	Extension for libraries and library services based on Web 2.0 concept.
OpenID	:	An OpenID is the form of a unique URL which is authenticated by the user's OpenID provider. The OpenID protocol does not rely on a central authority to authenticate a user's identity.
PDF	:	Portable Document Format.
Podcast	:	Blog post which contains audio file format.
Scalability	:	Capability to cope and perform under an increased or expanding workload.
Static Web	:	The part of the Web which is static or which does not update their databases regularly.
Synchronous Communication	:	Data transfer method in which sent (upstream) and received (downstream) data flows at the same speed, and is spaced by timing signals.
Web 2.0	:	The social web or read-write web. Latest version of World Wide Web which is more interactive than it was in its previous versions.
Web Browser	:	A tool to access World Wide Web.
XFN	:	**X**HTML **F**riends **N**etwork. A simple way to represent human relationship on the Web.
XML	:	Extensible Markup Language.

11.10 REFERENCES AND FURTHER READING

"AnswerTips". Web. <http://www.answers.com/main/answertips.jsp> .

"Campusbug." Web. <http://www.campusbug.com/index.php> .

Closs, Sissi. "Quick, Free and Ready-to-Use: The Wiki Concept".Web.<http://www.contentmanager.net/magazine/article_1428_wiki_concept.html>.

"GuruLib".Web. <http://www.gurulib.com/index.php> .

"LibraryThing".Web.<http://www.librarything.com/> .

"OpenID". Web. <http://openid.net/> .

Paul, Graham. "Web 2.0" .Web.<http://www.paulgraham.com/web20.html >.

"Revish." Web. <http://www.revish.com/ >.

Siemens, George. "ePortfolios, elearnspace". Web.17 Dec. 2009.

< http://www.elearnspace.org/Articles/eportfolios.htm>.

"Welcome To All Things Web 2.0 Open Directory".Web.< http://www.allthingsweb2.com/ >.

"Wiki".Web.<http://en.wikipedia.org/wiki/Wiki)> .

"What is Social Networking?"Web. <http://www.whatissocialnetworking.com/>.

UNIT 12 COLLABORATIVE CONTENT DEVELOPMENT

Structure

12.0 OBJECTIVES

After reading this Unit, you will be able to:

- explain the concepts such as content, content development and collaborative content development;

- discuss content development tools and the various formats of content;

- explain the different types of content management system;

- highlight the best practices for collaborative content development;

- describe web content development life cycle;

- explain the implications for libraries; and

- highlight the issues and challenges relating to quality, validity and authentication of contents.

12.1 INTRODUCTION

Any document contains information and this information can be in any media formats such as audio, video, graphics or in the form of simple text. In traditional books, text and graphics had major role to play, however, in recent times books have been supplemented with Compact Discs (CDs) which include audio as well as video files. The form of publishing has changed to electronic and the Internet is playing an important role in dissemination of information. The Internet has come up not only as a communication channel, but also is ruling the market of mass media. The content which can be delivered over the Internet contains multimedia objects, like, books, websites, animation, audio-video lectures, etc. The media could be interactive or customisable as per the reader's requirement. The publication time line has changed. Publishing can be done within no time and the object can also be edited at any point of time. Under such circumstances, the study of content, in general as well as over the Web and its vulnerability to change makes it a potential area of study.

12.2 CONTENT: AN OVERVIEW

Content is the subject matter or the thought expressed in the document. The idea conveyed by the content of the document may be of great value but if it is not presented effectively,its impact is lost. In order to have strong impact, the packaging and presentation should be of high quality. Electronic documents can be embedded with audio-visual, graphics and texts. But ultimately it should be the mix of audio-visuals, graphics and text in such a way so that they can have greater impact on the recipient.How good it can be achieved, is part of content development.

Hence, content development can be defined as creation of content for transferring the message intended, effectively. The content can be in the form of text, audio, video or graphics or the combination of these. The suitable use of multimedia adds value to the thought content and hence, it creates higher impact. Therefore, it is the skill of the presenter or the creator how s/he develops the content and present to people.When a number of participants or stake holders participate to generate content it is known as Collaborative Content Development.

12.2.1 Concept

The dictionary meaning of content is "substance of an object". Another meaning of content is "satisfaction". However, in our case it is the first meaning which we are concerned with. Thus, it is the information content of the object which is being considered here. The objects can be book, e-book, web page or any web-based object, etc. On the Internet, content is any information that is available for retrieval by the user, including web pages, images, music, audio, white papers, drivers and software downloads as well as training, educational and reference materials (Source: Computer Desktop Encyclopedia).

12.2.2 Content Tools (Media-wise)

The generation of content is through human intellect but there are also tools which are used to express the intellect more efficiently. Content is expressed in text, graphic, audio and video using different tools. Based on the form of media, tools can be categorised as:

- Text editing tools
- Graphic editing tools
- Audio capture and editing tools
- Video capture and editing tools

Text Editing Tools

Text editors are software used in Desktop Publishing (DTP). These are editors such as MS-Office Suite, Open Office Suite and Star Office,etc. They include packages to type text and also proof read. Other than this, they also contain packages for presentation, spread sheets and database for powerful presentation, calculation, and storage and retrieval respectively. A lot of literature already exists which requires retro-conversion from print to digital. Optical Character Recognition (OCR) technology is used to convert printed text to digital. Software like OmniPage Pro, TextBridge, Abbyy FineReader, etc. are OCR software available in the market. However, nowadays scanners come with basic OCR utility which can be used for light weight text editing.

Graphic Editing Tools

DTP is supplemented by effective use of graphics (images). This includes capturing the image and processing it in a presentable format. This requires use of capture devices like camera (ordinary as well as digital camera), scanners and data transfer cables. Once an image is captured it is to be converted to usable format and size. However, sometimes value addition to the image is also done by touching up the image. For the purpose, software like Adobe Photoshop, Corel Draw, etc. are widely used by professionals. However, GIMP (GNU Image Manipulation Program) is also a powerful tool to edit graphics available under Open Source License.

Audio Capture and Editing Tools

Sound has more pneumonic property than text and graphics. Hence, libraries are going more and more towards recording and collecting audio materials. Audio can be recorded with a recorder which is inbuilt in Mobile phones, Dictaphones, Computers, etc. These are affordable devices used commonly in day-to-day affairs. However, there are very costly studios with various kinds of mixers and error correction devices which are also available and are used in professional recording and music.

Audio Capture Card is available in the present day computers which can be used for recording. The card is connected with a Microphone which records input and feeds to the card. There are inbuilt utility software in the operating system which can be used to record and save the voice. Professional software like Authorware, WavePad, Goldwave, etc. can be used to create mixing effect.

Video Capture and Editing Tools

Libraries have lot of recorded presentations in their collections. The recording of any event is captured with the help of a video camera. Nowadays video camera directly record in computer readable format, therefore, there is no need to attach Video Capture Card with the computer. For editing the video there are many options available for example, CyberLink PowerDirector, Corel Video Studio ProX4, Adobe Premiere Elements, MAGIX Movie Edit Pro, VideoPad, Pinnacle

Studio HD, Roxio Creator, Sony Vegas Movie Studio Platinum, Roxio Video Lab, ShowBiz DVD and many such others.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

1)   Categorise the content tools according to media.

....

....

....

....

....

12.2.3 Content Formats

Content can be in any format including text, graphics,audio and video in an electronic environment. The Web is an amalgamation of multimedia objects with different kinds of expositions as products. Not only the product, there are formats, particularly the file formats which are important and must be taken care of and well understood. The file format plays a major role in data compression and transfer over network. It also plays a major role in digital archiving and preservation. The description of each media and corresponding file formats have been discussed in the following sub-sections of this Unit.

Text File Formats

Plain text files usually have the extension '.txt'. They are also called ASCII text files and can be viewed with an editor (such as Edit or Notepad) or with a Word Processor (such as MS Word or Word Perfect). ASCII stands for American Standard Code for Information Interchange. It was used for character representation in computers. However, the ASCII has now been replaced by Unicode. The characteristic feature of plain '.txt' files is that they do not allow any kind of formatting on the document (such as bold, italics, font colour, images, etc).

.htm/.html/ files

These files are also text files that deserve a special mention as they are the 'language' in which web pages are authored. 'html' stands for Hyper Text Markup Language. The code of a web page is written in plain text and is saved with the extension '.htm/.html'. The web browsers (such as Mozilla Firefox, Internet Explorer, Google Chrome, etc.) identify the file as a web page, read the code and display it on the screen as we see it with the images, colours and hyperlinks.

.xml files

XML stands for eXtensible MarkUp Language. It is an offshoot of Standardized Generalized MarkUp Language (SGML). This is also plain text file used for data storage and exchange/transfer.

Formatted Documents

.rtf files

Rich Text Format (RTF) is an open standard. The files can be created and viewed in many of the software such as MS-Office, Open Office, etc. This format carries formatting features such as bold, italics, font colour, images, etc.

.doc files

A very common format found on PCs, for formatted text files, '.doc' stands for document files. These files may be created, viewed and edited using programs such as MS Word. Several formatting features such as bold, italics, justification, bulleting, etc. are possible. It is a proprietary format of Microsoft.

.odt files

ODT stands for Open Document Text. It is part of the Open Document Format (ODF) originally developed by Sun Microsystems Inc., but now maintained by Organization for the Advancement of Structured Information Standards (OASIS). It is an XML based format. The files use '.odt' file extension. They are originally supported by Open Office and the Star Office word processor. ODT format includes several XML files and configuration files in zipped format. A zip file is a collection of many files. These files can be viewed with any archive managing software, like Winzip.

.pdf files

'PDF' stands for Portable Document Format. This file format was developed by Adobe Systems in order to make it possible to transfer formatted documents over the Internet so that their appearance would not change on any system. The biggest advantage of .pdf files is that it allows for printing of web pages – page by page as though it is a document file. This file type requires pdf reader for viewing e.g. Adobe Acrobat, XPDF, etc. This software can be downloaded from the Internet.

.ps files

'PS' stands for 'Post Script' files. It is also an ASCII file type that is technically plain text. However, it is unreadable unless an on-screen viewer like 'Ghostscript' or any other postscript viewer is used.

Graphic Files

Graphic file formats are many in number. Images are most important feature of web pages or any kind of publishing. It adds value as well as attracts the readers. In the Web parlance, images have to be capable of downloading quickly, they should not be bulky, though the original resolution should be preserved. There are several Graphic file formats. Graphic styles may be divided into two major types:

- Raster Graphics
- Vector Graphics

Raster Graphics

Raster Graphics/Images are collection of dots or pixels. They are also called as bitmaps. The colour of each pixel is described by one or more information

channels – separated into the primary hues – Red, Green and Blue or in a single stream of colour mapped data. Raster images are simple images and are hence most suitable for interoperability. However, the primary disadvantage is that they do not scale well. Scaling may lead to a loss of resolution and hence poorer picture quality.

Vector Graphics

The more complicated of the two is Vector Graphics.They define an image as a collection of vector equations. The advantage of vector graphics is that it gives smooth curves and lines irrespective of the size of the image or resolution. However, the disadvantage is that they take longer to draw and require more storage space.

Some Common Graphic File Formats

.bmp files

Bitmap files or .bmp files are the standard Windows Raster format. These files lay emphasis on quick display. They store images in the uncompressed form. The obvious trade off is that bmp files occupy lot of space. These files are quickly downloadable but on each transfer over network the quality of picture is lost.

.cgm files

Computer Graphics Metafile (CGM) is an ANSI standard graphic file format for 2D vector graphics and raster graphics. CGM is a metafile that is a file containing information that describes or specifies another file. Therefore, it holds data and information for reconstructing graphical images. It was originally designed and used for clip art libraries, but is now mainly used for technical applications such as CAD drawings.

.gif files

One of the most popular graphic file formats on the Internet, Graphic Interchange Files (.gif) was developed by Compuserve with the main purpose of archiving information. The .gif images are usually scanned stand-alone pictures that are not 'drawn' using an application program.

.jpeg/.jpg files

JPEG stands for Joint Photographic Experts Group that designed this format for high compression. It is one of the most popular image formats on the Web. It discards extra data and hence has good compression capabilities. It is a web standard and stores images in small size. It is useful when large numbers of files are to be incorporated and support millions of colours. It has better compression in photographs as compared to .gif.

JAS files

JAS format is from JASC Inc. This file format is designed to create the smallest possible image file for 24 bits per pixel colour images and 8 bits per pixel gray scale images. Saving and retrieving an image using the JAS file format will result in some loss of image data. It has very high level of compression.

PICT files

This is the standard Apple Macintosh graphic file format. It is accepted by many applications and imported/exported using clipboard (cut, copy, paste) to almost any text or graphics program.

Raw files

This flexible format consists of a stream of bytes that describes the colour information in the file. Each pixel is described in binary format where 0=black and 255=white. This format is used to transfer documents between different applications.

.tiff files

TIFF stands for Tagged Image File Format. This format was designed to overcome the problem of application dependence. It was originally designed to become the standard format. The format was intended to be capable of handling just about any possibility. This file format is generally used when graphic files need to be moved between different computer types (For example: PC to Mac and vice-versa). These files allow for high resolution and are supported by most scanning and image editing software. This format works well for both on-screen display and print photographs. This format differentiates among three categories of images i.e. black and white, grayscaled, and colour.

Audio File Formats

Sound files or audio files are gaining popularity on the Web. Today, most of the latest soundtracks are available on the Internet as sound files. There are even a few albums that have their presence only on the Web. Another popular application is online live news broadcasting. There are audio enabled websites. The following section discusses some of the common audio file formats.

.au files

It is a simple audio file format which is most commonly found on the Web. It is required by PC users to load applications such as Waveform Hold and Modify (WHAM) to play these files. Macs need different sound applications to play this file type.

.mid files

The .mid file extension is the standard extension used by MIDI music files. MIDI is a technical standard for Musical Instrument Digital Interface. These are used mostly in audio control in the multimedia industry. The MID files are used by a variety of music authoring programs and MIDI hardware devices.MIDI file specification allows for lengths to be specified as a variable number of bytes.

.aiff files

Audio Interchange File Format (aiff) was developed by Apple. Although it was originally made for Macs, now it can be used by other platforms too. It is a good audio file format for use on the Internet. It can also be used in multimedia authoring on both Macs and Windows.

.mp3

MP3 stands for MPEG layer three. It is currently the most popular audio file format. Its hallmark is its CD quality of music. MP3 allows for very high levels

of compression. A minute of music may constitute approximately 1 Mb file. An MP3 player, is readily available on both Macs and Windows, is required to play this file type.

.voc files

Creative Lab's Sound Blaster uses the .VOC file. They are designed for storing digitised voice data and hence the name. They can also handle any digitised sound in any format. The VOC files have a two part structure. The header block which defines the contents of the file and the data block which actually contains the audio information.

.wav

Wav file is a commonly used file format on Windows machines. It can be used on the Internet and is good for multimedia authoring. It is flexible and handles both compressed and uncompressed storage formats.

Video Files Formats

Video files have become most popular with films being available and viewed on VCDs and DVDs. However within a multimedia lab, it is important to be aware of the video file formats as these are the most disk space-occupying (bulky) types.

.avi files

Audio-Video Interleave (AVI) file format was developed by Microsoft. It is called 'Interleave' because the video and audio are bound together in chunks. The AVI file format is a very popular video file format and many videos have been produced in the format. AVI files can be opened in most of the video players such as VLC (Video LAN Client), RealPlayer, and Microsoft's Windows Media Player.

.mov/.movie files

Movie files are the common format used in QuickTime movies. It is a multimedia format developed by Apple. Originally, it was designed for Apple machines but now it is widely used in websites for streaming audio or video.

.mpg/.mpeg files

This is another standard format. This format uses MPEG compression scheme of audio and visual (AV) digital data. MPEG video is a series of video standards defined by the Moving Picture Experts Group (MPEG) External Link. The major standards are:

MPEG-1 - VHS-quality, commonly used for Video CD (VCD) and CD-ROM.

MPEG-2 - DVD-quality, commonly used for DVD, digital television, set-top boxes, etc.

MPEG-4 - Scalable delivery, used in various applications including the Internet, cell phones and television. MPEG-4 is a patented collection of methods defining compression. It was used for compression of web-based audio/video streaming data and CD distribution, voice (telephone, videophone) and broadcast television applications.

.qt files

Quick Time is a file format for storing and playing movies with sound. Developed and supported primarily by Apple Computer, the latest version is used on Macs. In Windows. Quick Time files usually appear with the ".MOV" filename externsion.

Self Check Exercise

Note: i) Write your answer in the space given below.

     ii) Check your answer with the answers given at the end of this Unit.

2) Mention some of the audio and video file formats.

....

....

....

....

....

12.3 INTRODUCTION TO COLLABORATION

Collaboration is a recurrent process where two or more people work together to achieve shared goals by sharing knowledge, learning and building consensus. The common goals could also be an intellectual endeavour or a means of creation of new knowledge.The Web, in its initial stages, was a publishing platform but because of the developments in technology it has now emerged as an interactive platform for communication, collaboration and participation. People separated by physical and geographical distance can come together and interact. Web 2.0 tools such as social networking services, blogs, wikis, multimedia sharing services, content syndication, etc. (which have been discussed in Unit 11 of this Block) facilitate people to collaborate and share information online. These developments have made it possible to share large-scale information not only in the form of text but also multimedia content such as audio/videos.Facilitation of participation and collaboration is a vital characteristic of Web 2.0 applications. The implementation of Web 2.0 applications and the collaborative and participatory nature of web-based information have given a wider meaning to the term 'collaboration'.

In this scenario, collaborative content development refers to working with others in the generation of content. Henneman,et al (1995) have referred to interdisciplinary collaboration and according to them a significant attribute of collaboration is that two or more individuals must be involved in a joint venture, typically one of an intellectual nature. Baggs and Schmitt (1988) identified critical attributes of collaboration. These include sharing of planning, goal setting, decision making, problem solving, assuming responsibility, open communication, cooperation, coordination and recognition and acceptance of separate and combined areas of activity.

12.3.1 Tools for Collaboration on the Web

The Internet enables interactive collaboration on a massive scale which is not easy in other real world communication channels. Collaborative content on a

massive scale is a distinctive feature of the World Wide Web. There is also digital reuse of content.

Collaborative software was originally designated as groupware. The term 'groupware' was coined by Peter and Trudy Johnson-Lenz in 1978 and defined as "intentional group processes plus software to support them". Groupware integrates co-evolving human and tool systems, yet is simply a single system.

Groupware tools are instruments which can be used to implement groupware functions. Groupware is built around three key principles depending on the level of collaboration (Lotus Notes):

i) Communication: This can be thought of as an unstructured interchange of information. For example, a phone call or an IM Chat discussion.

ii) Conferencing (or collaboration): This refers to interactive work towards a shared goal. For example, brainstorming or voting.

iii) Co-ordination: This refers to complex interdependent work towards a shared goal. For example, in a sports team everyone has to contribute the right play at the right time as well as adjust their play to the unfolding situation but everyone is doing something different - in order for the team to win. That is complex interdependent work towards a shared goal of collaborative management.

12.3.2 Features of Collaboration Tools

Collaborative software and tools promote communication, enable sharing of a text document, a photograph or other similar objects, allow natural interactions and be easy to use and learn. Some other features of collaborative tools are (Lomas et al, 2008):

Strong Communication Capability: The most important feature of a collaboration tool is its ability to facilitate communication and interaction between participants. This can be through video, audio or simple text.

Easy-to-Understand Interface: The interface of the tool should be easy and intuitive to navigate, perhaps emulating an existing tool or an aspect of the physical world. A user's ability to simply pick up, adapt to and use a tool considerably diminishes extensive training and supervision needs.

Capability and Expectation of Collaboration: To encourage input from participants, a collaboration tool should make it clear that the input is expected and will elicit a response. For example, an online presentation can be an ideal tool for collaboration, but it has to be made clear to the audience that they have to respond and interact with others instead of passively watching a webcast.

With the new web technologies encouraging and facilitating collaboration some other aspects related to the collaboration tools can also be noted. Most of the tools allow many users to participate and contribute. The collaboration can be instant real-time as in case of IM or asynchronous as in case of e-mail. The products of collaboration can be public and shared with wider public or can be restricted to some users. This can be seen in case of Blogs and Wikis. The mechanism of bringing the collaborators together is also important. The

collaborative tool can also be a social tool that allows the users to connect and work with others in a network.

12.3.3 Collaborative Content Development

In collaborative content development, individuals work together in a coordinated fashion towards a common objective. The users come together as a team, primarily for the accomplishment of a set goal. The collaborative work is facilitated by a collaborative software which provides tools that aid communication, collaboration and the process of problem solving to individuals separated by physical and geographic distances. The collaborative tools support individuals involved and also the interactions that take place between them during group decision making process. Collaboration and content quality management can be taken care of through the guidelines prepared by the community. Web-based applications have made it possible to bring ideas together and develop content collaboratively by providing easy to use, user-friendly applications. A number of applications and initiatives are there which enable different types of collaboration for different types of content. The Web offers possibilities of collaboration in various areas. These include online encyclopaedias, document management, project management, community or social networks, Learning Management System (LMS) and Content Management System among several others. Groupware, content management systems and portals offer a rich set of tools for collaboration. They have collaborative authoring tools and provide separate areas with member profiles, areas for online discussions, file and document sharing and for providing comments and feedback. In view of technological developments, content is increasingly being created in a collaborative manner with multiple authors and different users commenting, reviewing and providing feedback for a given document. Collaborative content development system has been discussed in detail in section 12.4.3 of this Unit.

Self Check Exercise

Note: i)　Write your answer in the space given below.

　　　ii)　Check your answer with the answers given at the end of this Unit.

3)　Define the concept of collaborative content development.

....

....

....

....

....

....

....

....

....

....

12.4 CONTENT MANAGEMENT SYSTEM: MODELS AND BEST PRACTICES

Content Management System (CMS), is a software or a suite of applications and tools that enables to seamlessly create, edit, review and publish content (text, graphic, audio and video) in such a manner that the overall work remains organised and redundancy is reduced. CMS is basically used for better control and effective collaboration. Content Management Systems are used for development of websites, portals and intranets by commercial, educational and non-profit organisations. CMS facilitates the creation of documents collaboratively. It helps in the easy creation, management and publication of documents and other content, such as images, audio/video and multimedia resources. According to Okes (2006) content management systems enable users to:

- Create and publish content in a standard format without needing to know HTML or other languages;

- Co-ordinate the work of teams of authors and editors (e.g. by ensuring that only one person is editing any individual content item at any one time);

- Control the branding and quality of content (e.g. by ensuring that the correct style sheets are applied and that changes to the content are approved before they are published);

- Reuse the same content item in multiple different websites and formats.

    The objectives of content creation differ and hence, as per the need, content management system also differs. There are different types of content management system available. These are:

    – Web Content Management System

    – E-learning Content Management System

    – Collaborative Content Development System

    – Digital Research Repository System

12.4.1 Web Content Management System

An organisation needs a system to conduct its day-to-day activities and keep its customers and employees informed. In order to do so, systems which can hold the data about the websites are deployed. A Web Content Management System (WCMS) is a software system that enables the users to create, manage and deploy content on web pages. The content includes text and embedded graphics, photos, audio and video. This application comprises of authoring tools, administration module and collaboration tools which enable the users to create and manage website content easily without any programming knowledge. There are simple readymade functions and modules which make it easier to manage and publish website content. A web content management system simplifies the process of publication of web-based content to a website. Most of the web content management systems are free and open source are characterised by ease of use and easy customisation as per needs. Some of the examples of web content management system are WordPress, Joomla and Drupal.

WordPress is the most popular web content management system. It was developed as a blogging CMS, but has been adapted into a full-fledged CMS. It is generally

considered to be the most user-friendly platform and is also the easiest to learn and use. It is easy to publish text, images or video in WordPress without any knowledge of HTML or any other programming language. Joomla is a popular web content management system for publishing web content. It is a free and open-source that can be used to easily create and edit web pages. Drupal is also a free and open-source web content management system. It is being used worldwide for various websites ranging from personal blogs to corporate, political and government websites. These web content management systems facilitate collaborative creation of content. They make web publishing fast, easy and affordable.

12.4.2 E-learning Content Management System

An Learning Management System (LMS) is a software application which facilitates the administration, documentation, tracking, reporting and delivery of e-learning education courses or training programmes. It handles all aspects of the learning process. It helps the instructor to create and deliver content, monitor student participation and assess student performance. An LMS is the infrastructure that delivers and manages instructional content, identifies and assesses individual and organisational learning or training goals, tracks the progress towards meeting those goals and collects and presents data for supervising the learning process of organisation as a whole (Szaboand Flesher, 2002). An LMS delivers content but also handles registering for courses, course administration, skills gap analysis, tracking and reporting (Gilhooly, 2001). It has interactive features for online collaboration which include threaded discussions, video conferencing and discussion forums. Learning Management Systems can be used for managing training and educational records, offering training programmes or courses over the Internet. They are used by colleges, universities and corporate training departments.

According to Ellis (2009) a robust LMS should:

- centralise and automate administration;
- use self-service and self-guided services;
- rapidly assemble and deliver learning content;
- consolidate training initiatives on a scalable web-based platform;
- support portability and standards; and
- personalize content and enable knowledge reuse.

An LMS has a facility to upload, manage and deliver instructional materials such as courseware, audio/video materials, etc. It has online communication tools such as e-mail and discussion forums for asynchronous communication and interaction among students and teachers. Tools such as instant messaging, chat, whiteboard and teleconferencing enable synchronous communication and interaction among students and teachers. There are assessment tools for self assessment and testing in the form of quiz etc. It provides learner reports, grading of tests and also has facility for learning through mobile and social networks.Blackboard and Moodle are commonly used LMS. Moodle is an Open Source Learning Management System. It is free to download and can be easily used in education, training and development, and business settings. Below is given a screen shot of of the IGNOU PhD -LIS Courses which are offered using Moodle.
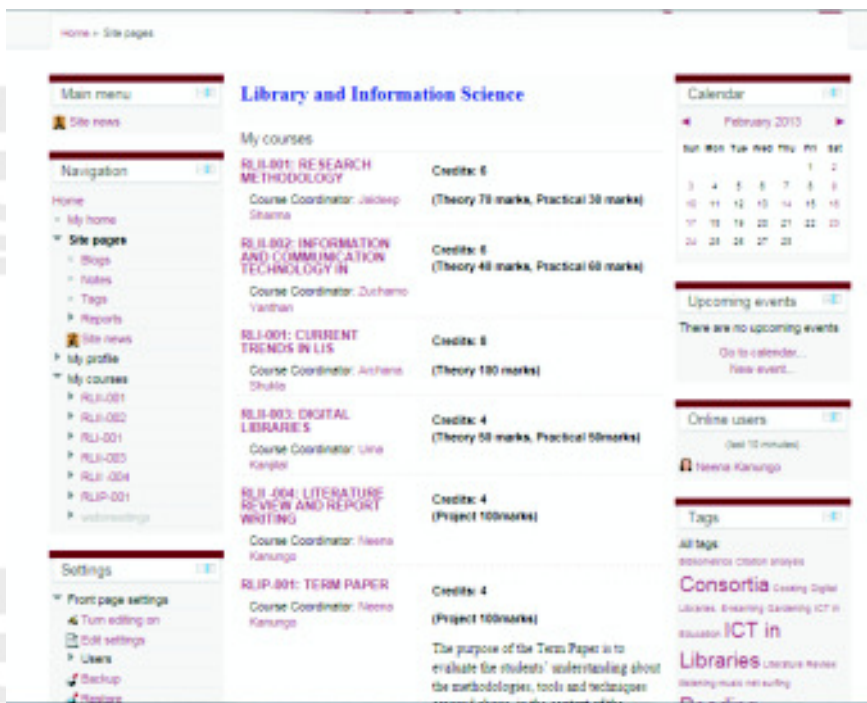
**Fig.12.1: Screen shot of the IGNOU PhD Courses offered online using Moodle
(Source: http://phdlive.ignouonline.ac.in/phdlive/)**

12.4.3 Collaborative Content Development System

Wikis and blogs have emerged as widely accepted environments for collaborative content development. Wiki is a web application that allows users to create and edit content in collaboration with others. Here, the content is developed by a number of users and is moderated by moderator if needed. Blogs are online journals which provide a collaborative space for content in the form of text, graphics, audio or video. Blogs can be easily hyper-linked thus creating large online communities. These applications provide tremendous opportunity for information sharing and ease of collaboration and are characterised by ease of use. Many free open source versions of these tools are available and this has led to their explosive growth. Wiki has been discussed in detail in following section.

Wikis

Wikis are editable websites. They allow users to edit the content live on the website from any terminal using a web browser. Users can create new content and change the organisation of existing web content. Hence, wikis are websites that allow easy creation and editing of any number of interlinked web pages via a web browser using a simplified markup language or a WYSIWYG (What You See Is What You Get) text editor.

There are a number of wiki software available on the Web in public domain. Wiki is a server side program that allows users to collaborate in creating web content.

Wikis are used for the following:

- to create collaborative websites;
- to power community websites;
- for personal note taking;
- in corporate intranets; and
- in knowledge management systems.

41

Wikis are provided with simple web interface for entering the text on the website. These wikis are accompanied with simple WYSIWYG. Hence, one does not need to know HTML (HyperText MarkUp Language) for hosting content on the Web. Apart from editing and uploading text, wikis allow hyperlinks, add or change images, tables and certain interactive components such as games. Wikipedia, which is an online collaborative encyclopaedia, is an example of wiki implementation.

Some of the features of wiki are as follows:

- Multiple versions of web page can be stored. It offers system administrator to revert to previous versions.

- Any modification by a person can be tracked.

- Simple text formatting using WYSIWYG text editor. Text can be hyperlinked within a website as well as outside the website. Image can be embedded within the page.

- Changes in the website can be notified through e-mail.

- Permissions can be set for the pages across wiki website. Hence, user level authorisation can be done.

- The backlink feature is extremely useful for checking wiki structure. This feature generates a list of all wiki pages that link to a specific wiki page.

- Contents of wiki can be exported in XML (Extensible MarkUp Language) format.

Wikipedia is an online encyclopaedia developed on participatory basis in different languages. In Wikipedia, an article can be written by a number of people. They can add, delete, edit and give hyperlink(s) to the contents of the article given on the Wikipedia. Below is given a screen shot (Fig 12.2) of the homepage of the Wikipedia. For better understanding, it is suggested to visit and explore the website of Wikipedia. The experience of browsing the website will further educate you to the concept of participatory web.
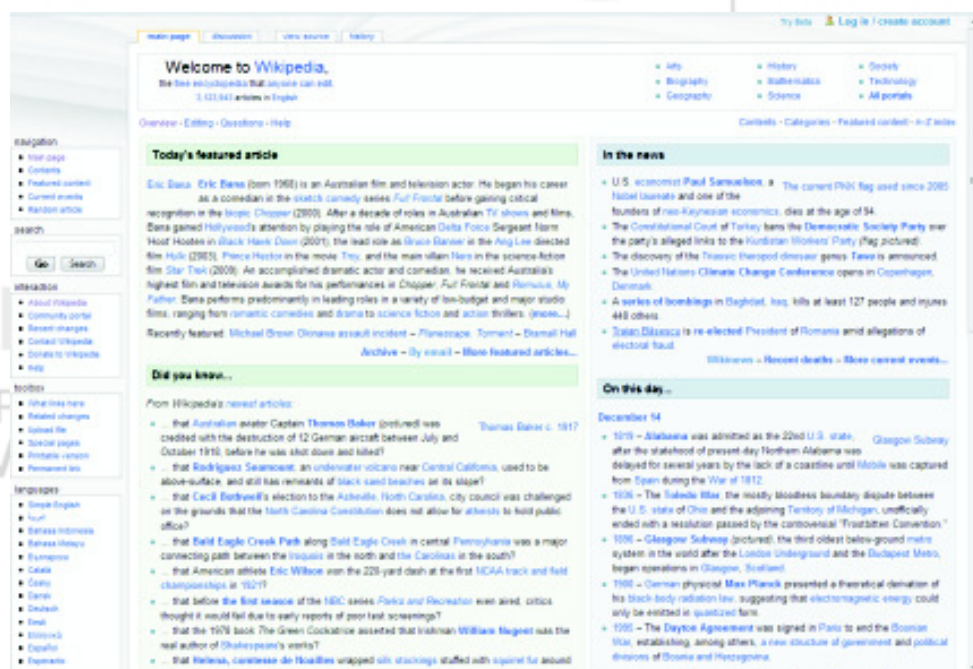

Fig.12.2: Homepage of Wikipedia
(source:http://en.wikipedia.org/wiki/Main_Page)

Another screen shot (Fig 12.3) of the Wikipedia given below demonstrates the editing process of the contents. Anyone who has some knowledge of the given article in the Wikipedia can edit as well as add, update or delete the contents.
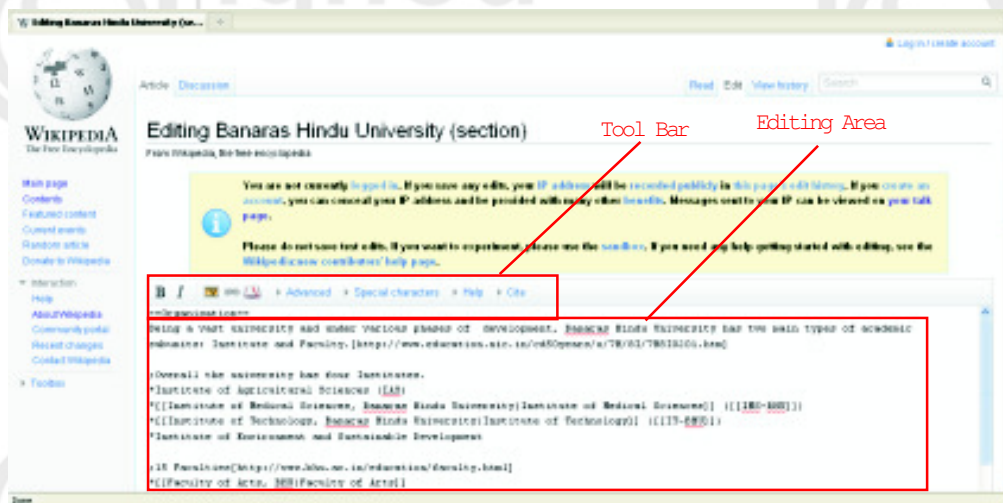

Fig.12.3: Wikipedia Editing Page
(Source:http://en.wikipedia.org/wiki/Banaras_Hindu_University)

12.4.4 Digital Research Repository System

A Digital Research Repository System (DRRS) is an online system for collecting, preserving and disseminating the intellectual output of an institution, particularly a research institution in digital form. Digital Research Repository Systems are also referred to as institutional repositories or digital archives. According to JISC, a digital repository is where digital content, assets are stored and can be searched and retrieved for later use. A repository supports mechanisms to import, export, identify, store and retrieve digital assets. Putting digital content into a repository enables staff and institutions to then manage and preserve it and therefore derive maximum value from it. Digital repositories may include research outputs and journal articles, theses, e-learning objects and teaching materials or research data.

DRRS are created to manage, preserve and maintain the digital assets, intellectual output and histories of universities, colleges and institutions. Research Repositories can store and provide a wide range of materials for a variety of purposes and users. These systems are used to gather and preserve the intellectual output of a laboratory, department, university or other entity. The collections are stored in electronic media formats (as opposed to print, microform or other media) and accessible via computers. They offer a mechanism to store, manage, reuse and curate digital materials. These digital systems are used by a variety of communities and different functions. The term includes not just software and hardware, but also policies, processes, services and people, as well as content and metadata (Nejla, 2006). DSpace and EPrints are commonly used digital research repository software. DSpace is an open source dynamic digital repository system developed in collaboration between MIT and Hewlett-Packard Company (HP). The system is based on an information model built to address the needs of an institutional repository. EPrints is a free and open-source software package which is used for building open access repositories. It was developed at the University of Southampton, School of Electronics and Computer Science, with the aim of enhancing open access to scholarly materials.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

4) Write are the different types of content management system?

....

....

....

....

....

5) What do you understand by wikis?

....

....

....

....

....

12.4.5 Best Practices for Collaborative Content Development

Following are the points to be considered towards best practices for the development of collaborative content:

- Identification of all stakeholders including customers of the intended content;

- Identify the goals of the intended content and its business applications;

- Defining the project team and with their intended roles;

- Editing of the content through a process work-flow;

- Modelling the content as per the stated objectives;

- Provide facts and avoid opinions.(Give defensible data);

- Avoid filler content and create a clean website focusing on customers;

- Classify the content with broad and understandable headings;

- Use of controlled vocabularies. If required, the terms should be explained in the form of a Glossary;

- Draw a presentation structure of information with generic to specific approach;

- Content should be designed such that it can be reused. Use of database or XML file for data storage further facilitates the reusability;

- Search and browse should be incorporated;

- Attempt should be made to display the information visually. However, extreme use of graphics must be avoided;

- Content developers should be trained to handle the system and input the information

- The content created should have proper and meaningful metadata tagging;

- The system should be scalable enough to hold the data and sustain with the future needs; and

- Versioning of content should be done and older documents should not be discarded at once.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

6)   Write a short note on best practices for content development.

   ....

   ....

   ....

   ....

   ....

12.5   WEB CONTENT LIFE CYCLE FRAMEWORK

The Web is a source of different types of information. Often, the authenticity and credibility of an information is questioned due to the volatility of information. The life expectancy of web content is difficult to measure. A third party cannot ensure that the same information would be available after a few days. But this does not undermine the importance of the Web in our life as it has become a way of life or the part of life.

There have been many debates and talks about the life expectancy of web content and the life cycle of a document on the Web goes through. It is the importance of the document and usability which defines its life on the Web and even after the Web. Sometimes such documents have archival value and must be stored in some kind of online archive. Hence, many of the web content software nowadays are incorporating a feature of document versioning, which means an updated document is also replaced by the previous one. If need of restoring or referring to the old document is felt, it can be used or restored.

The present life cycle of web content is derived from a document which has been developed for Web Content Management Requirements of Victorian Government, Australia. However, little modification has been done for your better understanding but the soul of the document is kept intact.

12.5.1 Life Cycle Management

Web content goes through five stages. These are:

- Development

- Quality Approval

- Publish

- Unpublished

- Archive

Content is developed by a creator or author. Once the content is approved then it goes for quality control approval by a Quality Control Manager. Quality control looks for the consistency in the process of content generation and accordance with the existing standards. Once approved, the content goes for publishing which includes creation of metadata. Metadata is data about an object which is commonly used for storage and retrieval. However, there are a number of contents which are not published for which also metadata has to be created. The procedure for publication has to be laid down and a continuous review of literature to be done so that it is updated. Improvement of skills of content generators through organised training and interaction with professionals should be done. This process is maintained by Business Quality Managers.
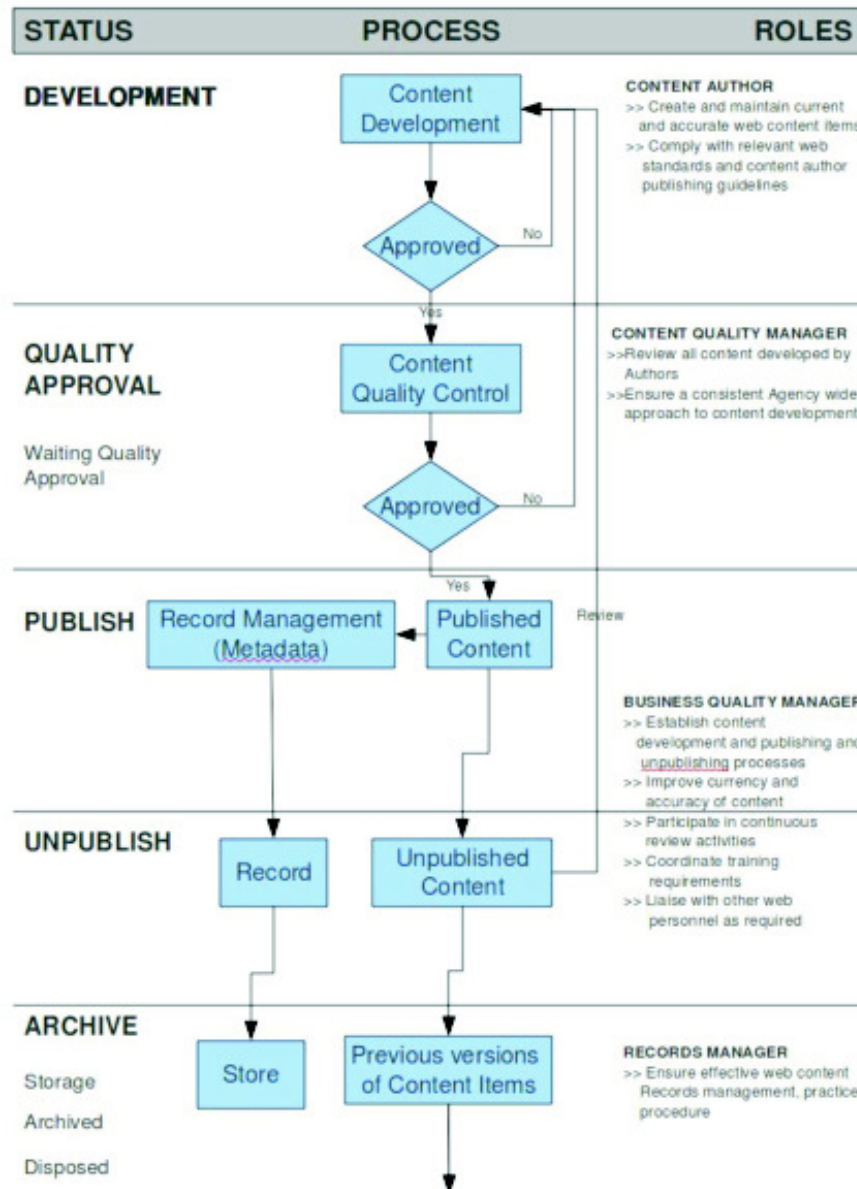
Fig. 12.4: Content Development Life Cycle
(Source: http://www.egov.vic.gov.au (modified version))

An unpublished document with less relevance can be sent for re-modification or review process otherwise, it should be disposed off. However, other unpublished and published content are sent to archive which is maintained by Record Manager. Such archiving is important for controlling the different versions of documents.

Self Check Exercise

Note: i)   Write your answers in the space given below.

ii)   Check your answers with the answers given at the end of this Unit.

7)   Name different media used for developing web contents.

....

....

....

....

....

8)   Name different stages of content development life cycle.

....

....

....

....

....

12.6   ISSUES AND CHALLENGES: QUALITY, VALIDITY AND AUTHENTICATION

Content on the Web should be kept simple, legible and adhering to the web standards. Standards bring more visibility and uniformity to the web content. It is very difficult to identify a suitable platform of software which can satisfy all the needs of users except a few. The web pages which are created must be dynamic and customisable not only for their look and feel but also for the content. The websites have to be interactive so that users can customise the services as per their requirements.There are several quality based issues involved in website design. They are:

Web content upgrading: The web content is said to be volatile text. Changes can be done very frequently, but to keep track of changes is a very difficult task. Even if there is a solution to keep track of different versions of a web page, we would further face a difficulty in deciding which version of the web page to keep and for how long and when to weed out.

Connectivity of data: Web content should keep the data of the website in such a way that data redundancy can be avoided. Whenever data is changed or modified at any place, it should be automatically updated wherever it occurs. The use of databases (especially XML based databases) to capture the data and then using it to develop web pages quickly and easily can be the ideal solution. It is often seen that hyperlinks don't work or the images are missing. Such issues should be automatically handled by Content Management Software.

Web response: The response time of a website or a web service takes is of great importance from the user's point of view. A quick response encourages users to

dig further through the web pages. The use of large size images or high resolution images must be avoided as they increase the traffic over network and hence, the response time.

Content and browsers: Websites are viewed using web browsers. Different web browsers support different standards and features. The developed content should be acceptable by majority of the web browsers. If the web content is not in confirmation with the browser then it would lead to loss of data.

A major issue with the web content is its validity and conformance to the existing standards. Apart from these web standards, there are other related standards which may impact upon the accessibility of the website (Source: Web Content Accessibility Guidelines 1.0).

Accessibility for the visually challenged: The users who are visually challenged have equal right to use the web content. The content should be designed in such a way that they should find themselves independent of others. The text and the images use must have audio supplementing the text for this class of users. However, there are software (text to speech) to help visually challenged users but it has to be incorporated within the design of the web content to add audio with text so that even their dependency on the software reduces.

Use of colours: Many of the underdeveloped countries do not have access to colour visual display units or if they are available they are beyond the reach of common man. For such users monochrome pages should be designed in such a way that different parts of web page makes sense to the users and convey the necessary information.

Conformance to old standards: Standards are ever evolving and the existing ones are being continually modified. In this context, the problem with the conformance to old standards is that it creates a problem at the time of access and display. There are no clear guidelines for designers about maintaining conformance to older standards. In this regard, a note within the web page about the standards used in designing the web page can be provided to assist the users.

Authentication is a process to ensure that an authentic person should only use the service. Normally, web services use user name and a password as method to ensure the authenticity of user. It is managed with implementing access control over the web content. The access can also be controlled through digital certificate distribution from the website. However, these features are implemented on the server which host the website or web service. Implementing such features may increase the access time to the web content.

12.7 IMPLICATIONS FOR LIBRARIES

The latest trend in library and information services is to deliver service at the desktop of the user whether it is information or the document. The document can be anything including multimedia objects. These objects are delivered online. Library is an organisation which is run by a team of professionals. Different services are offered by different professionals in the library. A collaborative environment of content development or service development would force the library to assess its capabilities and efficiencies. It will remove the dependency

on one man to put forward all the content on the institutional website. However, the library must follow a method to edit the content before it goes to the website. This not only develops a creative environment among the professionals but they also feel a sense of responsibility and recognition.

In collaborative method of web service development, users can easily make out who is the person responsible for a particular service. They need not to waste their time to find out the right person for a particular service or content. With the implementation of Web 2.0 technology the users need not visit the library premises to order a service or provide necessary feedback. It can be done right through the website which is more interactive from the user's point of view.

12.8 SUMMARY

In this Unit, we have studied different types of formats and media which are used for content development. Content management tools can use these multimedia objects to develop web content or web-based service for libraries. These tools can be used to tender responsibility of developing content across the organisation with enhanced control. The developed content can be put through a proper workflow before implementation or display. The developed content follows a life cycle. With the advent of Web 2.0, a number of web services are available over the Web which in turn has established different models for content development such as:

- Web Content Management System

- E-learning Content Management System

- Collaborative Content Development System

- Digital Research Repository System

We have also studied best practices about how to develop effective web services.

12.9 ANSWER TO SELF CHECK EXERCISES

1) Based on the form of media, tools can be categoriesed as:

   - Text editing tools

   - Graphic editing tools

   - Audio capture and editing tools

   - Video capture and editing tools

2) Audio Files Formats

   .au files, .mid files, .aiff files, .mp3, .voc files, .wav file

   Video Files Formats

   .avi files, .mov/.movie files, .mpg/.mpge files, .qt files

3) In collaborative content development, individuals work together in a coordinated fashion towards a common objective. The users come together as a team, primarily for the accomplishment of a set goal. The collaborative work is facilitated by collaborative software which provides tools that aid communication, collaboration and the process of problem solving to individuals separated by physical and geographic distances.

4) The different types of content management systems are:
   - Web Content Management System
   - E-learning Content Management System
   - Collaborative Content Development System
   - Digital Research Repository System

5) Wikis are editable websites. They allow users to edit the content live on the website from any terminal using a web browser. Users can create new content and change the organisation of existing web content. Hence, wikis are websites that allow easy creation and editing of any number of interlinked web pages via a web browser using a simplified markup language or a WYSIWYG (What You See Is What You Get) text editor.

6) In a collaborative environment all stakeholders must be identified with intended goals. There should be a work-flow to edit the content as per the stated objectives. Content should provide facts but avoid opinions. It is good idea to classify the content with broad and understandable heading. Also, controlled vocabularies supplemented with Glossary of Terms should be used. Reusable technology should be adopted in order to avoid data redundancy. Content should have features of searching and browsing and attempt should be made to display the information visually but extreme use of graphics must be avoided. Metadata must be used to supplement searching. It should be taken care that system is scalable enough to hold the data. Proper training for content development should be instituted.

7) Web content carries multimedia objects which includes text, audio, video and graphics.

8) Following are the different stages of Content Development Life Cycle:
   - Development
   - Quality Approval
   - Publish
   - Unpublished
   - Archive

12.10 KEYWORDS

Accessibility	:	A property which suggests the concept of reaching out to a place, person or application.
Authentication	:	Authentication is to process to ensure and control valid access to a service or content.
Best Practices	:	Practices adopted by the community which draws maximum benefits.
Content Life Cycle	:	Content has a Life Cycle which includes creation, review, delivery and usage.
Metadata	:	Data about and object in order to perform various activities on the object. For example, metadata for

	:	search and retrieval, metadata for preservation, metadata for description, etc.
Multimedia	:	Communication through more than one medium. Medium could be combination of (any two or more) text, graphic and audio-visual.
Open Content	:	A concept which allows free use, modification and distribution of content in any form.
Web 2.0	:	A more interactive and democratic form of WWW where the emphasis is on sharing and collaboration.
Wiki	:	A service which allows collaborative content development, reviewing and editing.

12.11 REFERENCES AND FURTHER READING

Baggs, J. G., and M. H. Schmitt."Collaboration between Nurses and Physicians". *Journal of Nursing Scholarship* 20.3(1988):145-149. Print.

Boiko, Bob.*Content Management Bible*. 2nd ed. USA: Wiley Publishing, 2005.Print.

Boulos, M. N., I.Maramba, and S. Wheeler." Wikis, Blogs and Podcasts: A New Generation of Web-based Tools for Virtual Collaborative Clinical Practice and Education".*BMC Med Edu* 6(2006): 41. Web.<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1564136/#!po=72.5000>.

"Building a Library Web Site on the Pillars of Web 2.0".Web.<http://infotoday.com/cilmag/jan07/Coombs.shtml>.

Computer Desktop Encyclopedia. Copyright (c) 1981-2010.

Ellis, Ryann K. "Field Guide to Learning Management Systems, ASTD Learning Circuits". 2009. Web.<http://www.astd.org/~/media/Files/Publications/LMS_fieldguide_2009>.

Gilhooly, K. "Making e-learning Effective". *Computerworld* 35 .29(2001): 52-53.Print.

Henneman, E. A., J. L.Lee, and J. I. Cohen, "Collaboration: A Concept Analysis". *Journal of Advanced Nursing* 21(1995):103-109. Print.

"IMS Abstract Framework: White Paper Version 1.0". Web.<http://www.imsglobal.org/af/afv1p0/imsafwhitepaperv1p0.html>.

JISC. "Digital Repositories: Helping Universities and Colleges". *Briefing Paper*.2005. Web.<http://www.jisc.ac.uk/media/documents/publications/repositorybphe.pdf>.

Lomas, Cyprien, M. Burke, and Carie L. Page."Collaboration Tools".*EDUCAUSE Learning Initiative Paper*.2008. Web.< http://net.educause.edu/ir/library/pdf/ELI3020.pdf>.

Lotus Development Corporation. *Groupware - Communication, Collaboration, Coordination*.Cambridge :Lotus,1995.Print.

Malhotra,Yogesh. *Knowledge Management and Virtual Organizations*.UK :By Group Publishing,2000.Print.

Mamèenko,Jelena. "Lecture Notes on Information Resources Part II: Introduction to Lotus Notes Collaborative Software". Web.<http://gama.vtu.lt/biblioteka/Information_Resources/ii_part_of_information_resources.pdf>.

Maness, Jack M. "Library 2.0 Theory: Web 2.0 and its Implications for Libraries". *Webology* 3.2(2006).Web.<http://www.webology.ir/2006/v3n2/a25.html?q=link:webology.ir/>.

Miller, Edward. "The Website Quality Challenge".Web.<http://www.soft.com/eValid/Technology/White.Papers/website.quality.html>.

Nakano, Russell. *Web Content Management: A Collaborative Approach*. 1st ed. Boston: Addison Wesley, 2002. Print.

Oakes, Graham ."Introduction to Content Management Systems". *Free Software Magazine*13(2006). Web.<http://www.freesoftwaremagazine.com/articles/cms_intro>.

Oreilly, Tim. "What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software".*Communications & Strategies*1(2007):17.Web. <http://ssrn.com/abstract=1008839>.

Peter, and Trudy Johnson-Lenz."Consider the Groupware: Design and Group Process Impacts on Communication in the Electronic Medium". S. Hiltz, and E.Kerr. *Studies of Computer-Mediated Communications Systems: A Synthesis of the Findings*, Research Report #16. Computerized Conferencing and Communications Center, New Jersey Institute of Technology, 1981.Print.

Richards, Griff, et.al. "The Evolution of Learning Object Repository Technologies: Portals for On-line Objects for Learning". *Journal of Distance Education* (Revue de l'Éducation À Distance) 17.3(2002) :67-79.Print.

Rockley, A., P. Kostur, and S.Manning.*Managing Enterprise Content: A Unified Content Strategy*.np: Pearson Education,2002.Print.

Semple, N. "Digital Repositories". *DCC Briefing Papers: Introduction to Curation*. Edinburgh: Digital Curation Centre, 2006. Handle: 1842/3372. Web.<http://www.dcc.ac.uk/resources/briefing-papers/introduction-curation>.

Szabo, M., and K.Flesher. "CMI Theory and Practice: Historical Roots of Learning Managment Systems". Paper presented at the *E-Learn 2002 World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, Montreal, Canada, 2002.Print.

"Web Content Accessibility Guidelines 1.0".Web. <http://www.w3.org/TR/WCAG10/#Guidelines>.

"Web Development and Design Foundations with XHTML".Web. <http://terrymorris.net/bestpractices/>.

"What is ODT?"Web.<http://www.coolutils.com/Formats/ODT>.

"Whole of Victorian Government Web Content Lifecycle and Content Management Roles".Web.<http://www.egov.vic.gov.au/Victoria/Strategies

PoliciesandReports/Reports/Content-Management/content-management-lifecycle.htm>.

Wu, Yuhfen Diana, and MengxiongLiu."Content Management and the Future of Academic Libraries".*The Electronic Library* 19.6 (2001) : 432-440.Print.

Yu, Holly, ed. *Content and Workflow Management for Library Websites: Case Studies*. London :Information Science Publishing, 2005.Print.

UNIT 13   WEB MARKETING

13.0   OBJECTIVES

After reading this Unit, you will be able to:

- discuss the theoretical and practical aspects of web marketing with special reference to its application in library and information services;

- describe web marketing techniques, tools and strategies that would enable library and information professionals to be competitive and to design effective strategies in the web-based business environment; and

- explain that use of the Internet and principles of web marketing techniques can enhance the visibility of a library and provide a rationale to support an opportunity for the use of e-business models.

13.1   INTRODUCTION

Nowadays the Web has become an essential medium of teaching and research, service operations, interaction and communication. It has become a viable tool for commerce and business as well. Over the years, e-business has increased the value of digital/electronic information and in the process has enhanced web marketing. In Unit-14:'*Marketing of Information Services*' of the course-BLI-222:'*Information Sources and Services'*, you have studied that marketing is

an important activity for libraries. Marketing helps library and information professionals to prove their worth, mobilise resources, build a positive image and to manage efficiently. Marketing is not confined to promotional efforts only but can also be built on interaction with users, whether they are actual or potential users in the library or outside. Marketing involves analysing marketing opportunities, selecting target markets, developing marketing mix, bringing out customer focus and implementing marketing efforts. In this Unit, you will be introduced to the concept of web marketing, how it is gaining importance in library and information centres and how it is changing the traditional marketing concepts. The concepts of web marketing, digital marketing and e-marketing are recent additions to the marketing approaches and have evolved during the last 10 to 15 years.

The proliferating electronic and digital libraries are most suitable for web marketing. A library with access to electronic resources needs web marketing efforts in order to make its users aware of the availability of electronic resources. Even a traditional library needs its web presence to attract, inform and motivate users for using the library.

13.2 WEB MARKETING AND RELATED CONCEPTS

Marketing has evolved with new technologies and has helped libraries to move from concentrating on product point of view to a user experience point of view. New technologies embody adaptability, programmability and also provisions for customisation and marketing delivers based on these qualities. New technologies have brought different types of media which can be used for marketing.

The term 'web marketing' means promoting products or services on the Internet. Internet marketing ties together creative and technical aspects of the Internet, which includes: design, development, advertising and sales. Nowadays there are many related terms used to denote web marketing. Other terminologies that are related and often interchangeable to web marketing include i-marketing, online-marketing, search engine marketing (SEM), e-marketing and digital marketing. According to the Dictionary of Web Marketing Terminology (http://www.thewestovergroup.com/files/TWG%20-%20Dictionary%20of%20Web%20Marketing%20Terminology.pdf) these terms have been defined as:

Internet Marketing

Internet marketing, online marketing and interactive marketing are all the terms that describe the efforts by marketers to reach a targeted audience through online channels. It also refers to the use of media to engage customer through search engine marketing, search engine optimisation, banner advertisements on specific websites, e-mail marketing, and Web 2.0 strategies.

Website Marketing

It deals with initiatives designed for the specific purpose of driving traffic to one's website. Website marketing may include traditional advertising vehicles, public relations and of course, online marketing initiatives.

Online Marketing

This type of marketing refers to the efforts by marketers to reach a targeted audience through online channels. Some of the initiatives that may be included are website marketing, e-mail marketing and search engine marketing.

Search Engine Marketing (SEM)

It is a marketing initiative that works within the dynamics of search engines such as Google, Yahoo!, MSN and others. SEM may include search engine advertising and search engine optimisation.

E-marketing

It implies marketing techniques via electronic media particularly, over the Internet.

Digital Marketing

It can be described as a process to develop, distribute and promote brand products and services using the Internet, mobile and other interactive media. As such, web marketing refers to applying marketing principles and techniques via web applications or to put it more simply *using web for marketing*.

The Web has made it possible for libraries to make their resources, services, products available online. The ability to offer individually tailored services to users in order to satisfy their needs and interact with them has become easier. Further, users can get registered online, they can raise their demands and subsequently libraries and information centres can better understand the users' needs and add value to the content specifically tailored to meet the needs. It is also possible to keep track of how often users visit the website, what web pages they view, how much time they spend online, what keywords they use, etc. Such information will be useful in redefining the information services and products for users. The Web offers opportunities to gather, disseminate detailed personal, demographic and behavioural user data. With the help of such data information products and services can be designed, developed and marketed.

Web marketing helps libraries and information centres to market their products and services efficiently. Library and information managers who utilise the Web as a medium of commercial and non-commercial transactions perform better. The Web has changed traditional marketing in a number of ways. Its impact is visible on libraries and information centres. First, the focus of marketing is on providing excellent service experiences to the customers in the business world. Relationship business model is being considered as more viable way of business in the present day environment. It is true in the case of library and information centre as well. Secondly, the Internet has globally extended the boundaries of any service operation. The providers of services located in a country can easily operate in other countries and the users can get services from the providers located anywhere. Thirdly, with the Internet based services, it has now become possible to offer 24×7 services to the users. Time is now not a factor which can hinder transaction in communicating providers with the seekers and vice versa. Fourthly, in the online world, user information can easily be captured, store and interpreted to make follow up strategies. The databases of such information can be used for meaningful knowledge creation and making strategic decisions. Such options can help to devise more effective and efficient marketing strategies and tactical implementation.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

1)   How has the Web changed the traditional marketing concept?

....

....

....

....

....

13.3   WEB MARKETING OF LIBRARY AND INFORMATION SERVICES

In the Web environment, users of the library products and services look for ease of searching and accessing information. Hence, searching information using search engines is gaining popularity over traditional methods of searching the library's information resources. Traditional libraries are now evolving into digital and virtual libraries and the present day environment requires that library and information professionals should acquire information and communication technology skills to perform their roles more effectively.

The Web has been known to be more than just a virtual space for libraries to explore and exploit opportunities to make themselves and their operations ubiquitous, especially in terms of the provision of their web-based information services. With the increasing use of new technologies, libraries are evolving and emerging into the virtual space with new media to communicate and interact with their existing and potential library patrons. Libraries, librarians and others involved in the information industry are well known for their specialisation in identifying, selecting and organising information resources in various formats, as well as, in searching for relevant information sources and effectively delivering the required information to defined user communities through value-added services. Success or failure of these services is in part affected by how effective these services have been marketed or promoted and the level of outreach activities conducted. Marketing and promotion are now accepted as valuable practices, aligned to library strategic plans and mission statements and have thus become part and parcel of a library's daily operations.

Today, creating awareness, informing, attracting and delivering the existing products and services and determining their appropriateness from users' point of view are important aspects of marketing. Therefore, potential of web marketing in library and information centres could be:

•   **Attracting** a variety of users to library's website/ web resources. Often the term 'attracting' refers to online and other media promotions and advertising strategies used to get individuals, groups and organisations to visit the website of the library and /or use the library. This can be done in many ways, e.g. through banners, gifts, games, free products, virtual tour, video promotions, etc.

- **Informing** is linked to the capacity of the Web to gather and present information about products, services, events and ideas of library and information centre. The exchange of information with library and information centre's stakeholders (e.g. users, funders, employees, suppliers, politicians, community, etc.) is important to web-based business strategies.

- **Positioning** is an important aspect of marketing. The services that a website of a library provides help the library to establish its uniqueness and enhance its presence in the virtual marketplace. Factors which can be used to examine this strategy include a comparison of types of online transactions, market targeting, community relations and domestic and international links to affiliated libraries.

- **Delivering** a service which is demanded by the users. This requires technical infrastructure, staff's efforts on delivery of information and service and presentation of the service on the library website which should be interactive, reliable and fast.

Web marketing is very important for marketing of library's products and services. It includes e-mail marketing, chat, banner advertisements, search engine optimisation, e-newsletters, affiliate marketing, virtual marketing, etc. Web marketing is a key enhancer of the marketing activities of a library. Present day users expect equal response from library as they get from commercial service providers over the telephone, e-mail, chat, etc.

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii)   Check your answer with the answers given at the end of this Unit.

2)   Discuss the potentials of web marketing.

....

....

....

....

....

13.4   WEB MARKETING ANALYSIS

The library and information centres must use web marketing as an effective and efficient tool for their outreach services and programmes for their targeted communities. Management, therefore, needs to understand the use of technology in library work processes. In essence, the careful integration of web technologies, library processes and current marketing tools and channels could lead to the following: satisfying patron needs, creating a strategic edge when delivering a piece of information or service, ensuring that resources are utilised properly to maximise library operations and services, identifying further favourable marketing opportunities, and engaging the community in the knowledge repository flow.

Web marketing process is guided by the philosophy that information technology can be applied to assist in increasing revenue and share in the market as well as

lowering the costs. Therefore, there is a need to apply digital data and information technologies both effectively and efficiently.

Library and information professionals must first go through the environmental scan and SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis prior to creating a web marketing plan and integrating information technology with the existing marketing strategy for their library.

The important tasks involved in the analysis are as follows – review of the library's environmental analysis and SWOT analysis, review of the existing marketing plan of the library and review of the libraries e-business objectives, strategies and performance metrics. The most important environmental factors that may affect any web marketing plan are legal, technological and market-related.

Web marketing strategic planning involves demand and supply analysis to be conducted to identify various segments (user groups) in online markets. Such segments can be formed on the basis of demographic characteristics, geographic location or some selected psychographic characteristics like attitude towards technology and wireless device ownership and past behaviour towards the product such as purchasing patterns online and offline.

13.5 WEB MARKETING MIX

Marketing mix is probably the most famous phrase in marketing/e-marketing. The elements of marketing mix are the marketing "tactics". In the digital world, elements change. Success of marketing programmes depends highly upon right combination of the elements. Web marketing affects traditional methods of marketing in two ways: first, it increases the effectiveness and efficiency in traditional marketing functions and secondly, web marketing transforms many marketing strategies which results in the development of new business models that not only adds value to the customer satisfaction towards the service but also results in increased profitability for company.

Hence, we deduce from the above mentioned points that web marketing in today's world allows for more effective and efficient marketing strategy and tactical implementation. Internet technology has greatly influenced library and information services. It helps libraries to offer services anytime, anywhere and to anyone. Since library and information services come under the purview of services marketing the 7P's of services marketing are also applicable for developing an effective web marketing strategy for LIS services. The 7P's are explained in the below given sub-sections.

13.5.1 Product

The most important web marketing mix in the case of libraries is the product, which can be offered to a user to satisfy her/his information needs. Products in libraries and information centres would include physical resources, e.g., books, journals available in print form, CD or on-line and services, such as making reply to queries, services related to databases and bibliographies, etc.

Information producers and consumers are rapidly increasing. Information can be sold like any other product. The most important consideration is that it should be with reference to the user needs. Libraries and information centers must study

the users' needs for the kind of products they want, the form in which they want and when and where they want to use. Today's market environment is technology-oriented and it would be more meaningful if libraries employ technologies to organise their resources, deliver library services and bring out information products.

Access: Access to a library product must take into consideration the following: as 24x7 Web access facilities, opening hours, learning and studying places, borrowing facility, document delivery, reciprocal borrowing with other libraries, resources sorted and catalogued, classified and stored for easy retrieval, navigability of website.

Resources: Selected resources must be of quality and relevance.

High Tech/ High Touch Relationships: It includes service points like face-to-face interaction, reference desk service, liaison librarians, information literacy classes, help and teaching documentation, curriculum integration, virtual reference – telephone, e-mail and chat reference service.

For the above-mentioned functions, appropriate services can be created online. By the use of the Internet working costs can be lowered in the long run. Users can seek benefits in terms of effective web navigation, quick download speed, clear website organisation, attractive and useful website design, secure transactions, free information services and user-friendly web browsing.

13.5.2 Price

The value of the information product or service varies according to the circumstances and the needs of the user. The library and information service providers should charge the appropriate price for the information product or service. Giving or offering the product or service free of cost may be a difficult pricing strategy. The main feature of the Internet in terms of pricing strategy is *Price Transparency*, which means that both buyers and sellers can view all competitive prices for items sold online. With the Internet, it is also possible to have an option of *Dynamic Pricing* i.e., varying prices for individual customers or *Fixed Pricing* i.e. every user pays the same price.

13.5.3 Place

Earlier, library buildings and the place provided to users for study and group work used to be an important resource for the users. Now, the products and services are available when and where needed i.e., easy accessibility. Hence, creating physical environment on the Internet would add value both to the users as well as service providers. With more and more users searching information on the Internet, a good website is an effective marketing tool in itself. New services and resources should be promoted prominently on the website.

13.5.4 Promotion

All methods of communicating with users either one-way or two-way are included in promotion. For library the aim of promotion is to build awareness among its users about what the services library offers and also to reduce the perceived and actual barriers to use the library. To achieve this objective a combination of various communication channels can be utilised to reach the maximum number

of target users. Web 2.0 technologies can be used to promote information, attract users towards information products and services and maintain a close relationship with them.

13.5.5 Process

To ensure the efficiency of user's resources (creating value for the users) libraries can create facilities in terms of reliable network and systems, easy navigability, availability of help, print and accessibility of web documents, self-service options in terms of online renewals and reservations. Process is the integration of technologies, resources and systems. All the above mentioned processes must be ensured for user-oriented library and information products and services.

13.5.6 Physical Evidence

The concept of library as a physical place is being replaced with library within the space. The products or services in the physical space must show some evidence of being qualitative and value-based in order to attract and retain users for a longer time.

13.5.7 People

Library staff is a part of production and delivery of the product. They are involved in service interaction with users. Library users need information to resolve a query and they also ask for customised solutions for their queries. In e-marketing of library services, face-to-face communication is missing, therefore, service levels should be created where users get prompt response to all their problems. At the same time rewards and recognition scheme for employees would help to strengthen the delivery of effective services. Library staff should be given incentives in the shape of rewards and recognition which would help in strengthening of effective delivery of products and services.

By focusing on 7P's of services marketing, the library and information services can develop a marketing orientation and appropriate management style to further exploit the potential of the Internet and other web-based services.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

3) Describe the web-based information products, a library can offer to its users.

....

....

....

....

....

....

....

13.6 WEB MARKETING PLAN

'Plan' is a blueprint for a web marketing strategy formulation and implementation. It is a guiding document that links the organisation's e-business strategy with technology driven marketing strategies and lays out details for plan implementation through marketing management. Outline of the various parts of web marketing plan is given below:

a) **Objectives/ Goals**: Identify general goals of web marketing strategy. They should address the following aspects – what is to be accomplished, how much time frame is required. As we all know that libraries have been traditionally non-profit organisations, therefore, objectives should be such that the exchange should look fair to both the parties (libraries and users) involved.

b) **Web Marketing Strategy:** Revenue streams are to be identified which are flowing from e-business models. The web marketing strategy involves designing of the offer, value and other management strategies regarding the 4Ps i.e., offer (product), value (pricing), distribution (place) and communication (promotion).

- *Product Policy and Design***:** Libraries can create awareness on their websites and adopt an e-business model where online membership can be offered. There can even be provision of offering customised services to each individual user. Basic issues involved in it are: a) *products/ services mix* –This includes industrial information, directories, databases, packaging (customising thematic packages), delivery (guarantee delivery), quality assurance (production scheduling); b) *copyright* –It involves intellectual property rights, new product development (generate ideas/ concepts, design and test products, design and test the marketing programmes, decide commercialisation, research budget).

- *Costing*: Identify all cost elements: relative costs of formats, methods and formulae (fixed costs, variable costs and investments), cost and volume relationship, value-added.

- *Pricing*: It takes care of pricing policy-general considerations. For example, to charge or not to charge, to offer discount or not, effect of pricing on sales, methods of pricing, differential pricing for different segments/ users, sustainability/ self-financing/ revenue generation, income generation with contributors.

- *Pricing Options*: Other sources of funds for libraries should also be taken into consideration. Pricing of services in library and information centres is a strategic decision based on issues like – costs involved in generation of services and whether services should be provided free or priced and if services are to be charged then what should be the criteria: price vs. cost, price vs. user benefits, price vs. competitor's price, foreign currency issues, foreign vs. local currency pricing, devaluation problems and convertibility.

- *Promotion*: This component of marketing mix also includes methods of communicating with users (one-way or two-way) to create awareness as well as attracting users to avail library services. This includes:

objectives (to create awareness, to convince the user of a product or service, to transform potential users into real users – creating a need), whom to promote, what messages to create, channels of promotion in e – marketing for example, e-mail, computer access, diskette delivery, etc.

- *Distribution*: In today's world libraries are seen not only as physical places, due to the fact that the services of the libraries have expanded beyond the libraries walls and this change has resulted into the creation of e-libraries or digital libraries with enhanced electronic collections, virtual reference and collaboration with services offered by other information providers. Libraries are now defined in terms of space (digital libraries or virtual libraries) and now the question is how to attract users to this form as designing an appropriate distribution strategy. The important aspects involved are: distribution techniques, commercial policy (easy access, credit cards, etc.).

c) **Budget:** It includes revenue and cost targets, guidelines on preparing costs, revenues and cash-flow budgets.

d) **Monitoring/ Control / Evaluation:** The main focus here is on identifying and understanding the benefits being derived from information activities as perceived by different clients and stakeholders and on exploiting this knowledge to the maximum advantage. It is done by measuring the inputs and outputs of information activities. It is basically the feedback on how to get information, how to process the information received from various sources. The steps involved would be: determining the object of assessment i.e. product or service, specific measures of inputs (resources utilised) and outputs (in terms of products and services), usage (use or non-use), outcome in terms of consequence of use or non-use and the environment within which product or service operates, measures or indicators include performance, cost effectiveness, cost-benefit and return-on- investment.

e) **Library's Business Plan:** The business plan reflects the understanding of the business environment, strengths and weaknesses of the network, business strategy, information products, their placement or distribution on network, promotion, price and expected cash flows. The business plan for a library also indicates the changes brought into the original plan while implementing it over a period of time, e.g. consolidation of budgets for all products/ markets with the budget of the library and information centre.

13.7 MAXIMIZING WEB MARKETING EFFORTS

The first and foremost thing for web marketing is that the library must have a user-centered website. It is important because that main goal of libraries and information centres is to cater to the users to provide the information they need. It should be effective, efficient and satisfying for users as well as providing services and information to users according to their preferences.

But creating and maintaining library website is not enough for web marketing. Efforts should be put to attract users to use, access and share the information. Dr. Ralph F. Wilson, an e-commerce Consultant, has created a checklist of 37 items, which one needs to consider for getting more visitors to a website for online

business. These could be related to search engines, linking strategies, social media strategies, traditional media strategies, e-mail strategies, paid advertisement strategies and miscellaneous strategies.

The 37 checklist items are divided into seven main headings and are given below:

a) **Search Engine Strategies** include the following points:

- Writing a Keyword-Rich Page Title

- Writing a Description META Tag

- Including Keywords in Headers (H1, H2, H3)

- Positioning Keywords in the First Paragraph of Your Body Text

- Including Descriptive Keywords in the ALT Attribute of Image Tags

- Using Keywords in Hyperlinks

- Making Navigation System Search Engine Friendly

- Creating a Site Map

- Developing Webpages Focused on Each Your Target Keywords

- Fine-tuning with Careful Search Engine Optimization

- Promoting Local Business on the Internet

- Promoting Video, Images and Audio Content

b) **Linking Strategies** include the below mention actions:

- Submitting the Site to Key Directories

- Submitting the Site to Trade Organization Sites and Specialized Directories

- Requesting Reciprocal Links

- Writing Articles for Others to Use in Websites and Newsletters

- Issuing News Releases

c) **Social Media Strategies** refer to the following actions:

- Beginning a Business Blog

- Becoming Part of a Social Media Community

- Promoting Your Site in Online Forums and Discussion Lists

- Asking Visitors to Bookmark Your Site

d) **Traditional Media Strategies** include the following actions:

- Including Your URL on Stationery, Cards and Literature

- Promoting Using Traditional Media

- Developing a Free Service

e) **E-mail Strategies** refers to the below mention activities:

- Installing a "Signature" in Your E-Mail Program

- Publishing an E-Mail Newsletter

- Aggressively Asking for E-Mail Sign-ups

- Sending Transactional and Reminder E-Mails

- Sending Offers to Your Visitors and Customers

- Exchanging E-Mail Mentions with Complementary Businesses

f) **Paid Advertisement Strategies** include the following:

- Advertising in an E-Mail Newsletter

- Beginning an Affiliate Program

- Purchasing Pay Per Click (PPC) Ad

- Listing the Products with Shopping Comparison Bots and Auction Sites

- Renting Targeted, Commercial E-Mail Lists

g) **Miscellaneous Strategies** contains the following actions:

- Announcing a Contest

- Devising Viral Marketing Promotion Techniques

13.8   SOME CASE STUDIES

Libraries are the treasure of information/knowledge and it is necessary for the libraries to show their holdings, activities, information products and services and expertise to the users so that they understand the value of libraries and how libraries can change their lives. Here, two cases have been presented and discussed from the point of view of how libraries can use the Web as a marketing tool in making the library popular, improving its reputation and bring out the information products and services to the notice of the users and substantiate relationships.

Case Study-1

In the first case study we have described how the University of Bergen Library has made the use of promotional video as a tool for library marketing. We have taken the reference of a multimedia presentation from the film which was posted on University Library's website. If you visit YouTube, which is a social media website, you will also come across many such other video programmes prepared by many institutions/libraries for marketing/promotion purposes.
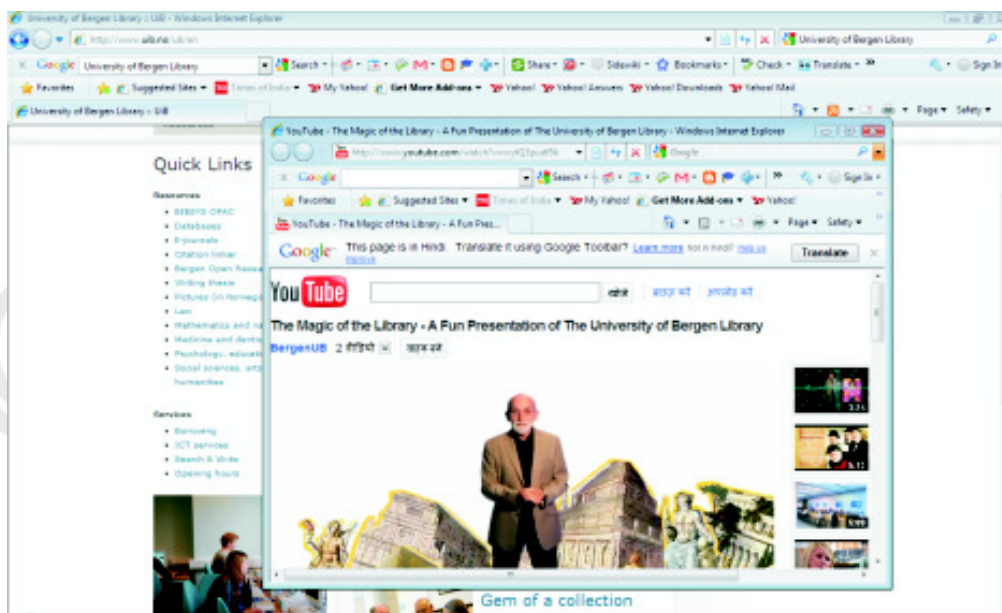

Fig. 13.1: The University Library: Your Source of Information
(Source: http://www.youtube.com/watch?v=wytQ3pudf5k)

"Library and information professionals are always keen to improve their image in different ways; the Web 2.0 tools offer great many opportunities in this regard. One such effort was made by The University of Bergen Library (http://www.uib.no/ub/en) which wanted to make a multi-media presentation of the library to provide an interesting, exciting and fun review of the library collections, resources and departments. In the above screen shot you can observe that the video has been used as a tool for library marketing. The library started with a clean slate and the goal was to create something new and different. The video was developed to convey the fantastic opportunities the library offers by presenting it as an exciting, inspiring and cool place. The video was also meant to challenge prejudices about libraries in general.

The general impression was that knowledge of the University Library and the broad range of resources offered by the library was not good enough. In particular, special collections, photo collections, and our many departments were not well known. The Library simply wanted to increase the public's desire to use the library. The target group was the university's patrons but with a special focus on new students.

The primary target group for the film is students and the film was posted on our website (link) and used in training and information seminars. The library wanted the students to gain a better understanding of the vast collection of resources the library can offer, and highlight the potential of the library as a meeting place.

The video has created greater awareness of the library in the academic society as well as among the students. The librarians use the film to kick off training sessions, and it is experienced that large number of people watch the video on the YouTube."

(Extracted from: www.marketing-mantra-for-librarians.blogspot.com, http://marketing-mantra-for-librarians.blogspot.in/2010_04_01_archive.html)

Case Study-2

Information products and quality reference services are important for today's information professionals to enhance their visibility and to contribute to overall organisational growth and strategy. To make you understand this, we are citing here a case study of the Learning Resource Centre (LRC) of the Indian School of Business (ISB). This case study reflects on products and services of the LRC of the ISB. The main purpose of this film is to create awareness among the users about the resources and services of LRC.

Fig.13.2: Information Products Enhance Visibility and Quality of Your Service
(Source: www.isb.edu)

"The Learning Resource Centre (LRC) had proactively realized the need for a number of products at the Indian School of Business (ISB). The LRC understands that the stakeholders are always pressed for time and are unable to utilize the wealth of resources for their academic and other decision making purposes. The flagship info-product of the LRC "Global InfoWatch" was conceptualized with the clear objective of extended value added service of providing the latest and up-to-date information on B-schools in India and across the globe, industry trends and market research updates to help students to perform better in their assignments, projects and other academic pursuits were also provided. The product is very useful for stakeholders in taking informed decisions as it tracks and disseminates data on success parameters such as admissions, b-school profiles, placements, executive education, and intellectual contribution across the other business schools from published literature. The Placement Guide and Industry Watch under the umbrella of Global InfoWatch extend the content with specialized updates on the recruiters who come to campus for placements, industry updates, and market trends. These products give students the edge during placements interviews as the latest information is accessible on a single platform in a personalized way, i.e., students and other stakeholders have the privilege of setting their preferences and can modify their interests from time to time, dynamically. The other sub-products such as Course Guide, CD-Watch, etc. also help the stakeholders in enhancing their performance. This concept and such info-products would definitely enhance the visibility of the organization and the quality of the learning experience for its stakeholders."

(Extracted from: www.marketing-mantra-for-librarians.blogspot.com, http://marketing-mantra-for-librarians.blogspot.in/search?q=indian+school+of+business)

Self Check Exercise

Note: i)   Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

4)   Describe the items covered in a web marketing plan for a library.

....

....

....

....

....

13.9   SUMMARY

After going through the contents of this Unit, it is clear that the scope of web marketing for libraries and information centres is extremely wide. With the rising use of websites, web-based services, the use of web marketing in libraries and information centers is likely to grow in the time to come. For web marketing, the Internet-specific strategies should be devised for segmenting and targeting the users based on the data from market research which highlights their information use pattern/behaviour. After developing effective and efficient systems and

procedures for achieving desired targets, the staff must be able to communicate and deliver services in the customer preferred ways to satisfy the customers. The benefits and advantages of the library's products over the competitors should also be communicated to the users so that the library's relevance is maintained to its prime clienteles. In the present day scenario the libraries and information centres which will utilise the potential of web marketing to its fullest, will stay close to their users.

13.10 ANSWERS TO SELF CHECK EXERCISES

1) Nowadays users expect customised information products which offer value to them. The web-based technologies offer ample marketing opportunities to give users round the clock delivery of services, in the format and at the speed they need. Web marketing is a much wider concept.

2) Web marketing is an important aspect of marketing library's products and services. It helps in creating awareness, informing, attracting, delivering the existing products and services and determining their appropriateness from users' point of view.

3) As we all know that a service can be a product and a product can be a service. In case of library and information centres, the products could be any type of information which is accessed through websites, databases, e-resources.

4) Web marketing plan is a blue print of the web market, strategic formulations and implementation. It covers various aspects such as: objectives, strategy, budget, evaluation, appropriateness with the business plan, etc.

13.11 KEYWORDS

Affiliate Marketing	:	Marketing practice which rewards the affiliate (s) for each visitor or customer brought about by the affiliate's own marketing efforts.
Analytics	:	A key component of online marketing that involves a measurement and analysis of data produced by websites, online campaigns and other interactive initiatives. Analytics can be used to document the effectiveness of online efforts, calculate financial returns and discover worthy enhancements as indicated by user behaviours.
Banner Advertisement	:	An advertisement that is placed on a website and which is generally links back to the advertiser's website. Banner advertisement varies in size and may be created in different formats including static, animated and video.
Conversion Rate	:	Typically represents the percentage of targeted web users that take a desired online action step such as completion of a form, purchase, etc.
Keyword	:	Search engines define keywords as the word or set of words used to conduct a search. Online

advertisers will purchase keywords that match searches relevant to their products or services. Keywords may also be utilised to optimise a website and gain better natural rankings with those same search engines.

Metrics : Most often associated with web analytics, metrics are what the marketer has determined to measure for the purpose of monitoring and improving the performance of one's website, advertising campaign, etc. Simple metrics might be the number of unique visitors to specific web page, the average number of pages viewed by a visitor or number of online registrations per week.

Outreach Activities : Wider interactions with the community or specific group about the services/products/offers of the library and information centres.

Return on Investment (ROI) : Although heavily used in the finance industry, online marketing can be structured to produce the data necessary to calculate the return gained as a result of the marketing investment.

Relationship Business Model : Business in which more emphasis is given on one-to-one relations on sustainable basis in order to keep customers trust for long time. For that purpose allocation of resources to build strong business relationship is made with a view to achieve relationship outcomes.

Search Engine Optimisation : A process of increasing visibility of website/ web page through search engines.

Service Marketing : A field of marketing that includes marketing of telecommunications services, financial services, hospitality services, car rental services, air travel, health care services, library services and other services.

Traffic : Web traffic is the term used to describe the volume of visitors that enter a website and is often expressed as the number of visitors within a given period of time. The pathways taken by visitors once they enter the website are often analysed and known as traffic patterns.

Value-added Services : Value-added services add value to the services offered by the library. These services are with more features in comparison to normal/ basic services.

Visitors : Representing the number of visits to a specific web page or website during a period of time by users/ browsers. If an individual returned to the web page or website multiple times during this period, each visit is counted.

Web 2.0 Strategies : Using online tools and platforms strategically so that library staff and users share opinions, insights, experiences, and perspectives with each other, more frequently.

13.12 REFERENCES AND FURTHER READING

Amey, L. "Marketing Library Services: Lessons from the Private Sector". *APLIS* 6.2(1993). Print.

Chaffey, Dave. *e-Business and e-Commerce Management: Strategy, Implementation and Practice*. 2nd ed. Delhi: Pearson Education Ltd., 2004.Print.

DeSaez, E. *Marketing Concepts for Libraries and Information Services*. 2nd ed. London: Facet Publishing, 2002.Print.

Gupta, D. K., et al. *Marketing Library and Information Services: International Perspectives*. Munchen: K.G. Saur, 2006.Print.

---. and A. Jambhekar, eds. *An Integrated Approach to Services Marketing: A Book of Reading on Marketing of Library and Information Services*. Mumbai, India: Allied Publishers Private Unlimited, 2003.Print.

Jain, A.K., et al., eds. *Marketing Information Products and Services: A Primer for Librarians and Information Professionals*. New Delhi: Tata McGraw Hill, 1999.Print.

---. *Marketing of Information Products and Services*. Ahmedabad: Indian Institute of Mangement, 1994.Print.

Liu, Lewis G. "The Emergence of Business Information Resources and Services on the Internet and its Impact on Business Librarianship." *Online Information Review* 24.3 (2000).Print.

Mi, Jia, and Nesta Frederick. "Marketing Library Services to the Net Generation." *Library Management* 27 .6/7(2006): 411-422.Print.

Pantry, Sheila, and Peter Griffits. *Creating a Successful e-information Service*. London: Facet Publishing, 2002.Print.

Rowlands, Ian, et al. "The Google Generation: The Information Behavior of the Researchers of the Future." *ASLIB Proceedings* 60.4 (2008): 290-310.Print.

Rowley, Jennifer. *Information Marketing*. Adlershot: Ashgate, 2001.Print.

Saxena, R. *Marketing Management*. Delhi: Tata McGraw Hill Publishing Co. Ltd., 1998.Print.

Siess, Judith A. *The Visible Librarian: Asserting Your Value with Marketing and Advocacy*. Chicago: American Library Association, 2003.Print.

Simeon. "Evaluating the Branding Potential of Websites across Boarders." *Marketing Intelligence and Planning* 19.6(2001): 418-424.Print.

Strauss J., A. E. Ansary, and R. Frost. *E-marketing*. Delhi: Prentice Hall of India P. Ltd., 2006.Print.

"WebMarketingTerminology".Web.<http://www.thewestovergroup.com/files/ TWG%20-%20Dictionary%20of%20Web%20Marketing%20Terminology.pdf>.

Wilson, Ralph F. "The Web Marketing Checklist: Ways to Promote Your Website." Web.< http://www.wilsonweb.com/articles/checklist.htm>.

Wisniewski, Jeff, and Darlene Fichter. "Electronic Resources Won't Sell Themselves: Marketing Tips." *ONLINE* January (2007): 54-57.Print.